



## **(DENSITÉ) SERIES**

*DEC-1021 12-Bit Composite to SDI Decoder  
Guide to Installation and Operation  
M761-9900-101  
June 2007*

# *DEC-1021*

### **DESCRIPTION**

The DEC-1021 is a high-quality composite analog video to SDI decoder designed for incoming feed applications. This 12-bit decoder offers 2D and 3D adaptive decoding filters, video proc-amp functions, VBI data processing, AGC, input validity and error detection reporting. A frame sync with TBC functions is optional. When combined with one or multiple audio cards, an operator can select any of the audio channels to embed into the SDI signal. Each audio output channel can be composed of a mix of any two audio input channels. New technology includes Thumbnail & ALM (audio level meter) generation and an optional Waveform/Vectorscope over IP of the output signal, which allows the operator to control and see the changes made to the signal.

This card operates with the MSB-1121 Monitoring Switching Bridge which allows the output of any module in the Densité frame to be monitored.

### **Features and Benefits**

- Composite analog video differential input with passive loop-through
- Up to five (5) SDI 4:2:2 digital video outputs
- Reference input with passive loop-through
- 12-bit A to D conversion with 2D and 3D adaptive decoding
- Video processing control
- Ancillary Data Blanking or pass-through
- Automatic user calibration of components based on a known test pattern
- Built-in test signal (Full Field 75% Color Bars with 100% White)
- Audio embedding of 8 channels (when linked with audio card)
- Frame Sync Option provides timing, full phasing and freeze modes
- Thumbnail generation
- Waveform/Vectorscope over IP option (operates with iControl)
- Provides output to Monitoring Switching Bridge option (MSB-1121)
- Cable equalization for up to 300m.

### **PROBING OPTION: DESCRIPTION**

The DEC-1021 Probing Option integrates several advanced features for monitoring of both video and embedded audio signals. The Probing Option offers complete real-time measurement and analysis of an extensive set of signal parameters, as well as flexible alarm thresholds and sensitivity. Once defined, the DEC-1021 probing settings can be saved along with the rest of the card configuration, in five user-defined profiles. Using iControl, the DEC-1021 Probing Option can conveniently and remotely be enabled and configured, on existing Densité-Series DEC-1021 cards.

### **Features and benefits**

#### Multi-format Video Parameter Probing

- Signal Presence Detection
- White Limit Max
- Luma Min
- Luma Max
- Chroma Limit Max
- Freeze Detection
- Black Detection

#### VBI Signal Extraction and Analysis

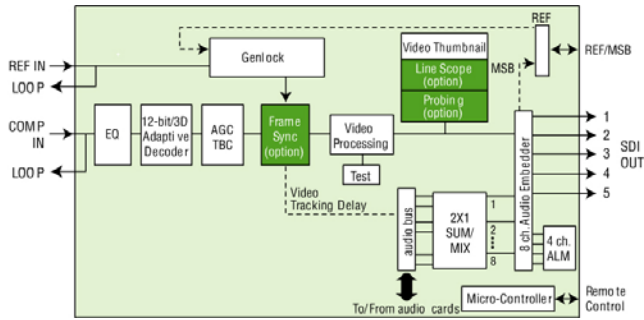
- Close Caption
- VITC (Analysis Only)
- V-Chip
- WSS
- XDA Data

#### Audio Parameter Probing – using Densité-Series UAP-1781 audio companion card

- Audio Silence
- Audio Overload
- Audio Max Level
- Audio Min Level

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**FUNCTIONAL BLOCK DIAGRAM**



**COMPOSITE IN with EQUALIZATION**

**SIGNAL:** NTSC (525/60) SMPTE 170M  
 PAL (625/50) ITU-R BT470-6  
 PAL-M (525/60) ITU-R BT470-6  
 SECAM ITU-R BT470-6  
 with passive loop-through.

**RETURN LOSS:** > 35 dB up to 5.75 MHz

**COUPLING:** DC

**LEVEL:** 2Vpp max

**IMPEDANCE:** 75 Ohms bridging

**EQUALIZATION :** Match attenuation curves of Belden 8281 to 300m.

**REFERENCE IN**

**SIGNAL:** NTSC SMPTE 170M / PAL ITU-R BT470-6 reference black signal with passive loop-through

**RETURN LOSS:** > 35 dB up to 5.75 MHz

**SDI OUT**

**SIGNAL (5):** SDI SMPTE 259M-C (270 Mbps) + SMPTE 272M-C

**RETURN LOSS:** > 15 dB up to 270 MHz

**JITTER:** < 0.2 UI (0.74ns) pp (WIDEBAND)

**VIDEO PROCESSING PERFORMANCE**

**QUANTIZATION:** 12 Bits

**SAMPLING:** 8fsc (2X oversampling)

**FREQ. RESPONSE:** ± 0.1 dB up to 5.5 MHz

**NOISE (UNWEIGHTED):** < -60 dB up to 5,75MHz

**PROCESSING DELAY:** TBD

**2T K FACTOR:** < 0.5%

**DIFFERENTIAL GAIN:** < 0.5%

**DIFFERENTIAL PHASE:** < 0.5 degree

**LNL:** < 0.5%

**MISCELLANEOUS**

**TEST GENERATOR:** 75% color bars with 100% white bar

**STORAGE TEMP.:** -40 to 85 °C

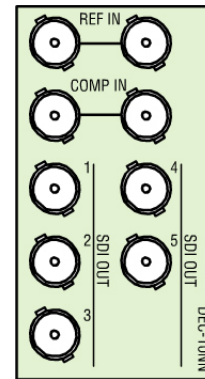
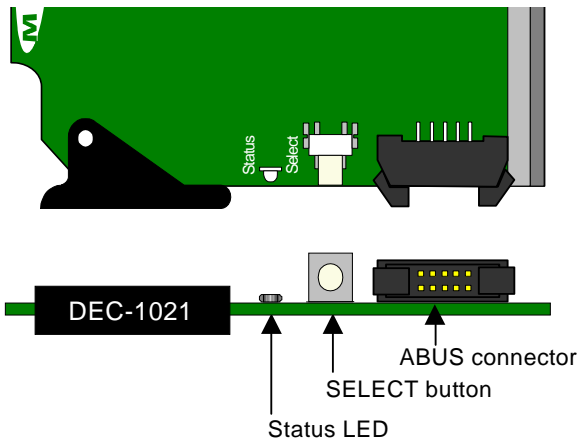
**OPERATING ENV.:** 0 to 40 °C

**POWER:** 6.1W (Max current)

**AUDIO EMBEDDING**

**DIGITAL STREAM:** 8 audio signals embedded  
 Audio selectable (On/Off)  
 24 bits, 48 kHz, Synchronous

**EMBEDDING:** As per SMPTE-272M-C



**DEC-1021 Rear Connector Panel**

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## INSTALLATION

Make sure you have ordered and received the DEC-1021 and its associated rear panel. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

- \* DEC-1021 12-Bit Composite to SDI Decoder
- \* DEC-10NN-DRP Rear Panel (see figure)

The DEC-1021 must be mounted in a DENSITÉ frame. The installation includes both the DEC-1021 module, and the rear panel module. It is not necessary to switch off the power from these frames when installing or removing the DEC-1021.

When used in conjunction with an audio module such as the UAP-1781, the ABUS flat cable needs to be installed between the ABUS connector of the DEC-1021 and the connector of the audio module. The ABUS flat cable is supplied with the audio module.

Detailed instructions for installing cards and their associated rear panels in the Densité frame are given in the Densité Frame manual.

### Rear Panel Options

When a double-width rear panel has been installed, the module must be installed in the right-most of the two slots covered by the panel in order to mate with the rear panel connectors. Should it be installed in the wrong slot, the front panel LED will flash red. Move the card to the other slot for correct operation. No damage will result to the card should this occur.

## OPERATION

### Overview

The DENSITÉ frame incorporates a controller card, located in the center of the frame. The controller handles local and remote control and error reporting for all cards installed in the frame. It is equipped with an LCD display and control panel for local use (assigned to the card whose SELECT button has been pushed), and an IP connection for remote control via Miranda's iControl system (see the iControl section beginning on page 7 for complete instructions).

### Local User Interface – Status Monitoring

The DEC-1021 has a STATUS LED on the front card edge, visible through the front access door of the DENSITÉ frame. This multi-color LED indicates module status by color, and by flashing/steady illumination, according to the following

chart (which also indicates fault reporting for this card on the DENSITÉ frame's serial and GPI interfaces).

	Serial Report	GPI Report	Green	Yellow	Red	Flash Red
No SDI signal					⊗	
No audio grp 1				⊗		
No audio grp 2				⊗		
No audio grp 3				⊗		
No audio grp 4				⊗		
Silence Ch. 1				⊗		
Silence Ch. 2				⊗		
Silence Ch. 3				⊗		
Silence Ch. 4				⊗		
Silence Ch. 5				⊗		
Silence Ch. 6				⊗		
Silence Ch. 7				⊗		
Silence Ch. 7				⊗		
Overload				⊗		
Test				⊗		
No rear panel						⊗
Hardware failure						⊗
Card system					⊗	

⊗ : Factory default.

The LED color assignments for some error conditions can be reconfigured by the user (see the menu for details). Press the SELECT button on the DEC-1021 card-edge to show its status on the Densité frame's controller card display.

### Example :

D	E	C	-	1	0	2	1								
S	I	L	E	N	C	E	C	H	1						

Use the keys on the local control panel (described in the Controller card manual) to step through the displayed error messages in the STATUS menu (the top item in the menu shown on pages 4 to 6).

### Operating Parameter Adjustment

The DEC-1021 has operating parameters that may be adjusted at the controller card interface. After pressing the SELECT button on the DEC-1021 card, use the keys on the local control panel (described in the Controller card manual) to step through the displayed menu and adjust the parameters. **See pages 4 to 6.**

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**DEC-1021 Card Menu**

STATUS	NO SIGNAL / NTSC / PAL / PAL-M / SECAM, NTSC B&W, PAL B&W	
	NO EXTERNAL REF / EXTERNAL REF 525 / EXTERNAL REF 625	
	NO URS / URS 525 / URS 625	
	REF MISMATCH	
	INPUT FORMAT ERR	
	NO REAR / DOUBLE REAR	
	OUTPUT : 525 / 625	
	TEST ON	
	A1 MISSING	
	A2 MISSING	
	CARD SYSTEM	
	HARDWARE FAILURE	
USER PRESET	LOAD	[USER 1 ,USER 2, USER 3, USER 4, USER 5]
	SAVE	[USER 1 ,USER 2, USER 3, USER 4, USER 5]
INPUT	FORMAT	[ <u>AUTO</u> , NTSC, PAL, PAL-M, SECAM, NTSC B&W, PAL B&W]
	OPERATION MODE	[SATELLITE, <u>STUDIO</u> , VCR]
	DECODING FILTER	[ <u>2D ADAPTIVE</u> , NOTCH / BANDPASS, 3D ADAPTIVE]
	CC	[ <u>OFF</u> , ON] (525)
	WSS	[ <u>OFF</u> , ON] (625)
AUTO CALIBRATE	START	O.K / NO GOOD
VIDEO PROC	ALL GAIN	[-800, -799, ... <u>0</u> ...799, 800]
	LUMA GAIN	[-800, -799, ... <u>0</u> ...799, 800]
	CHOMA GAIN	[-800, -799, ... <u>0</u> ...799, 800]
	HUE	[-40, -39,... <u>0</u> , .... 39, 40]
	BLACK LEVEL	[-64, -63, ... <u>0</u> , ..., 63, 64]
	PEDESTAL	[-5, -4.5, ... <u>0</u> ...9.5, 10] (IRE) (NTSC / PAL-M)
		[-27, -106, ... <u>0</u> ...106, 107] (PAL / SECAM)
	EQ	[ <u>NONE</u> , 1, 2, ..., 300] (meters)
		[ <u>NONE</u> , 3, 6, ..., 984] (feet)
	EQ UNITS	[ <u>METERS</u> , FEET]

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AUDIO	EMBEDDING	CHANNELS 1234 TO	[OFF, <u>GRP 1</u> , GRP 2, GRP 3, GRP 4]	
		CHANNELS 5678 TO	[OFF, GRP 1, <u>GRP 2</u> , GRP 3, GRP 4]	
* Available with Audio Card connected				
	OUTPUT MIXERS	CHANNEL 1	OPERATION MODE	[ <u>OFF</u> , A, SUM(A+B), MIX]
		CHANNEL 2	OPERATION MODE	[OFF, <u>A</u> , SUM(A+B), MIX]
			ABUS	[ <u>A1</u> , A2]
			CHANNEL SELECT	[ <u>1</u> , 2, 3, .... 8]
			LEVEL	[-96, -95, .... <u>0</u> ] (dB)
			MUTE	[ <u>OFF</u> / ON]
		CHANNEL 3	OPERATION MODE	[OFF, A, <u>SUM(A+B)</u> , MIX]
			SOURCE A	ABUS [ <u>A1</u> , A2]
			CHANNEL SELECT	[ <u>1</u> , 2, 3, .... 8]
			SOURCE B	ABUS [ <u>A1</u> , A2]
			CHANNEL SELECT	[ <u>1</u> , 2, 3, .... 8]
			SUM (A+B) LEVEL	-6, <u>-3</u> , 0 dB
			MUTE	[ <u>OFF</u> / ON]
		CHANNEL 8	OPERATION MODE	[OFF, A, SUM(A+B), <u>MIX</u> ]
			SOURCE A	ABUS [ <u>A1</u> , A2]
			CHANNEL SELECT	[ <u>1</u> , 2, 3, .... 8]
			LEVEL	[-96, -95, .... <u>0</u> ] (dB)
			SOURCE B	ABUS [ <u>A1</u> , A2]
			CHANNEL SELECT	[ <u>1</u> , 2, 3, .... 8]
			LEVEL	[-96, -95, .... <u>0</u> ] (dB)
			MUTE	[ <u>OFF</u> / ON]
BLANKING	VBI (10-20)	[ <u>PASS</u> , BLANK, PROC, DECOD, USER]		(DEC-1021 525)
	VBI (6-22)	[ <u>PASS</u> , BLANK, PROC, DECOD, USER]		(DEC-1021 625)
INPUT LOSS		[ <u>KILL</u> , BLACK, FREEZE FIELD, PASS]		* Available with Frame Sync Option
TIMING	FRAME DELAY	[ <u>0</u> , 1, 2]		* Available with Frame Sync Option
	VERTICAL	[ <u>0</u> , 1, 2, .... 523, 524] (lines)	(525)	* Available with Frame Sync Option
		[ <u>0</u> , 1, 2, .... 623, 624] (lines)	(625)	* Available with Frame Sync Option
	HORIZONTAL	[ <u>0</u> , 0.037, 0.064, .... 63,5] (us)	(525)	
		[ <u>0</u> , 0.037, 0.064, .... 64] (us)	(625)	

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REFERENCE	SOURCE	[ <u>AUTO</u> , EXTERNAL, URS, INPUT]	* Available with Frame Sync Option
	URS FORMAT	[ <u>OFF</u> , 525, 625]	* Available with Frame Sync Option
CARD SYSTEM	[ <u>NONE</u> , A1, A1 + A2]		
TEST	VIDEO	[ <u>OFF</u> / ON]	
	AUDIO CH 1&2	[ <u>OFF</u> / ON]	* Available with Audio Card connected
	AUDIO CH 3&4	[ <u>OFF</u> / ON]	* Available with Audio Card connected
	AUDIO CH 5&6	[ <u>OFF</u> / ON]	* Available with Audio Card connected
	AUDIO CH 7&8	[ <u>OFF</u> / ON]	* Available with Audio Card connected
CONFIG ALARMS	NO SIGNAL	ALARM LEVEL [GREEN, YELLOW, <u>RED</u> , FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
	REF MISMATCH	ALARM LEVEL [GREEN, YELLOW, <u>RED</u> , FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
	NO REF	ALARM LEVEL [GREEN, YELLOW, <u>RED</u> , FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
	INPUT FORMAT ERR	ALARM LEVEL [GREEN, YELLOW, <u>RED</u> , FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
	TEST	ALARM LEVEL [GREEN, <u>YELLOW</u> , RED, FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
	CARD SYSTEM	ALARM LEVEL [GREEN, YELLOW, <u>RED</u> , FLASH RED] ALARM REPORT [ <u>NONE</u> , GPI]	
VERSION	DEC-1021: xxx		
OPTIONS	LINE SCOPE ON/OFF	Key: xx.xx.xx.xx	
	FRAME SYNC ON/OFF	Key: xx.xx.xx.xx	
FACTORY DEFAULT	[RESTORE]		

## iCONTROL INTERFACE

iControl is Miranda's graphical user interface. Users can remotely access and operate many Miranda products from a remote computer via an IP interface. This manual describes the control panels associated with the DEC-1021 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 DEC-1021 icon to open the control panel.

The control panel has three sections, as shown in the figures beginning on page 8.

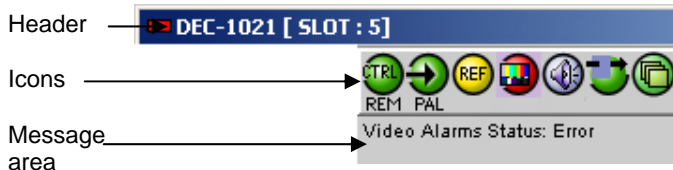
**Selection Buttons:** arrayed down the left side of the control panel, these buttons select the contents of the main window. The *User Presets* section, which appears at the bottom of the column of buttons, is described on page 16.

**Status Bar:** at the top of the panel, shows status icons for several key items, and text messages describing detected errors. A complete description of the status bar begins below.

**Main Window:** shows controls and information for the area of interest which is shown at the top (and which is the same as the name on the selection button, e.g. *Input* in the example on page 8). A complete description of each area of interest begins on page 8.

### Status Bar

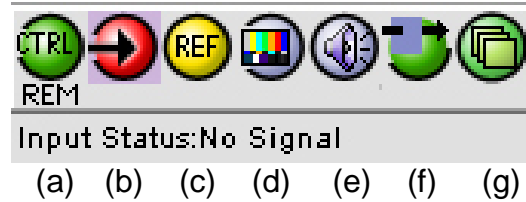
The status bar provides a continuous update of the status of the DEC-1021. The status bar includes three sections:



The **header** gives the product name (by default) or user-assigned name, and identifies the slot in which it is installed in its Densité frame. At the left is a status icon whose color shows the overall status of the DEC-1021:

- Green = OK
- Yellow = warning
- Red = error

The seven **icons** monitor some specific aspects of the DEC-1021's operation:



(a) this icon shows the whether this DEC-1021 is being controlled locally or remotely:



LOCAL – being operated from the Densité frame control panel (SELECT button pushed). Message: Manual card configuration ON



REM – remote operation via iControl is enabled. Message: Manual card configuration OFF

(b) this icon identifies the video standard detected on the probe's composite input. The video format is shown under the icon; move the cursor over the icon to see a more detailed description in the message area.

(c) this icon shows the status of the external reference.

(d) this icon shows the video alarm status.

(e) this icon shows the audio alarm status.

(f) this icon shows whether the test signal generator is OFF (icon as shown in the example) or ON in various configurations:



Video test only ON



Audio test only ON



Audio and Video tests both ON

(g) this icon shows the status of the ABUS connection to outboard audio processing cards

Move the cursor over an icon to see its current status in the **message area** below the icons. If there is an error status, the message will appear automatically, as shown in the example. If there are multiple error messages, the display will cycle through them.

## Main Window

The Main Window shows all controls, adjustments and information pertaining to the area of interest which appears as a title to the panel, corresponding to the selection button to the left of the control panel.

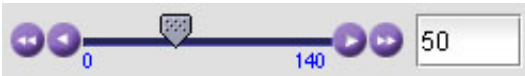
In many cases, controls are provided to configure the DEC-1021's features. Types of controls that may be found are:

### Slider:



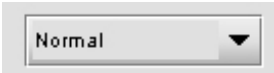
The current value is displayed beneath the center of the slider bar (e.g. 39 in the example shown). To change the value, move the slider by clicking and dragging it, or by clicking the arrow icon at either end.

### Slider with data box:



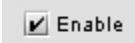
The current value is displayed in the data box at the right hand side (e.g. 50 in the example shown). To change the value, move the slider by clicking and dragging it, or by clicking the arrow or double-arrow icon at either end, or type a new value directly into the data box, and hit "enter" from your keyboard. If you enter a value outside the permitted range (as shown beneath the slider), the data box will flash red and the value will not be changed.

### Pull-down list:



The current selection is shown on the icon. To change it, click on the down arrow at the right of the box, and click on the desired option in the list that appears below the box.

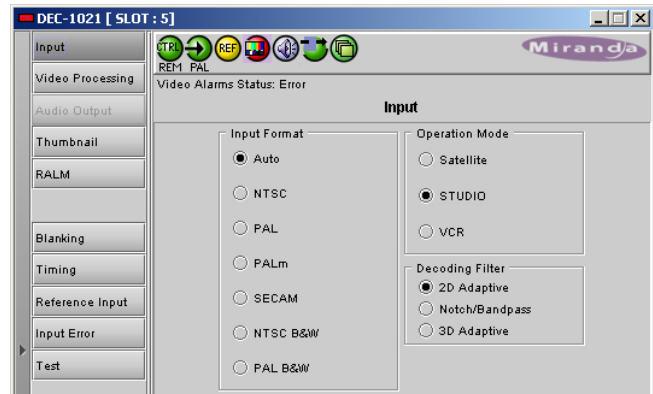
### Check box (with label):



A selected box has a checkmark in it, as shown in the example, while an unselected box is blank. Click on the box to change its status.

## Input

These parameters are used to set the input format and pre-processing filters.



**INPUT FORMAT:** *Auto, NTSC, PAL, PALm, SECAM, NTSC B&W, PAL B&W:* Select input format. When using **AUTO**, the DEC-1021 detects the type of input and automatically switches to that format by loading the decoder with the format's parameters. When working with monochrome input signals, set the format to *NTSC B&W* or *PAL B&W* to accept a black and white input.

**OPERATION MODE:** *Satellite, STUDIO, VCR:* Select **STUDIO** source type when using high quality sources, **SATELLITE** for satellite sources, and **VCR** for unstable sources.

**DECODING FILTER:** *2D Adaptive, Notch/Bandpass, 3D Adaptive:* Select the decoding filter according to the nature of the input composite signal: *2D Adaptive* for fast-moving images requiring optimum performance, *Notch/Bandpass* for lower-quality sources and *3D Adaptive* for optimum performances with static patterns.

## Video Processing

These controls allow the user to adjust some parameters of the video encoded in the output SDI signal.





**ALL GAIN:** -800, -799 ..., 799, 800: Sets luma and chroma gains to a specific value. When other gains are individually set, **ALL GAIN** reflects the average value of the combined gains for a given output format.

**LUMA GAIN:** -800, -799 ..., 799, 800: Sets luma gain to a specific value.

**CHROMA GAIN:** -800, -799 ..., 799, 800: Sets chroma gain to a specific value.

**HUE:** -40, -39 ..., 40: Sets hue to a specific value in degrees.

**BLACK LEVEL:** -64, -63 ..., 63, 64: In NTSC mode, sets Black level to a specific value.

**PEDESTAL:** -5, -4.5 ..., 9.5, 10 (525) / -27, -26 ..., 106, 107 (625): sets a pedestal value in IRE units.

**LENGTH:** Using the **UNIT** checkbox, select either **FEET** or **METER**. **FEET:** 0, 1 ..., 983, 984; **METERS:** 0, 1 ..., 299, 300: Sets the frequency equalizer to compensate for the video signal's high-frequency loss caused by the cable length.

**Audio Output (with optional audio card)**

Click on the Audio Output button at the left side of the DEC-1021 control panel to open this view in the main window.



When combined with up to two audio cards such as the UAP-1781 Universal Audio Processor, these parameters provide extended controls over audio embedding.

**CH 1-2, CH 3-4, CH 5-6, CH 7-8 tabs:** each of these tabs controls a pair of channels; each channel is provided with a set of controls.

**Operation Mode:** Off, A, SUM (A+B), Mix: Select the source of the signal that will be output on this channel:

- **Off:** The output channel is muted.
- **A:** Output only the channel selected in the Source A pulldown
- **SUM (A+B):** Output the sum of two channels selected in the SOURCE A and SOURCE B pulldowns. Use the SUM (A+B) Level pulldown to apply an attenuation (-6 dB, -3 dB, 0 dB) to the summed output.
- **Mix:** Output a mono mix of two channels selected in the SOURCE A and SOURCE B pulldowns.
- **MUTE:** click the checkbox to mute this channel.

**Source A and Source B**

**ABUS Select:** A1, A2: selects the external audio card to be used for this channel (A1 or A2).

**Channel:** Channel 1 ..., Channel 8: selects the source channel to be used from the Audio Bus.

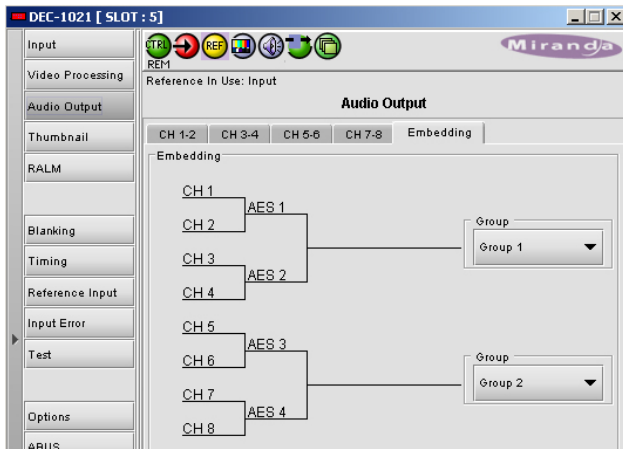
**Level (dB):** -96, -95 ..., -1, 0: sets an attenuation Level for the selected source.

**Note:** **SOURCE A** and **SOURCE B** must be made available through **Multiple Card Config** in the **ABUS** window (see page 15) before they can be used in this window .

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## Embedding

CH 1, 2, 3, 4 and CH 5, 6, 7, 8: use the pulldown list to choose the AES audio groups in which audio channels 1 to 4 and 5 to 8 will be embedded.



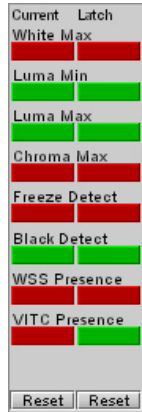
## Thumbnail

Thumbnails are used to monitor the video output signal of the DEC-1021. Streaming parameters are set using these controls.



## Status Display (optional with activation of the probing options)

On the left side of the panel is a display of the current status of the parameters measured by the probe. Two separate status columns are shown:



**Current status** shows the status now. **Latched status** shows the status as affected by latching. When an error is detected, it is flagged in both columns by turning red. When the error disappears, the current status returns to green. However, the Latched status shows the error until it is manually cleared using the Reset Latched button beneath the status monitors. You can also reset the Current status, to confirm the presence of displayed errors. Only those parameters that have been enabled are reported in the current status list; the others show a gray status box and their names are grayed in the list.

## CONNECTION sub-tab:

**ENABLE: OFF, VIDEO:** enables thumbnail streaming or turns streaming OFF

**SIZE: SMALL, MEDIUM, LARGE:** selects the size of the Thumbnail image.

**PLAYER: OFF, THUMBNAIL:** Click on the Thumbnail box to enable the thumbnail Player. A window opens in the top section and shows a thumbnail associated with the SDI video stream that is being encoded by the DEC-1021. Note: you must check the VIDEO box in the ENABLE section to see the video image.

## Quality and Refresh Rate:

- Use the left-hand pulldown to select the video quality to be sent by the streaming encoder. The choices are Poor, Normal and HiQ (e.g. high quality).
- Use the right-hand pulldown to select the refresh rate for the transmitted thumbnails. The choices are Fast, 1 sec, 2 sec ..., 10 sec.

**Streaming Priority Control:** Click the *Take control from Slot [##]* checkbox to force the Densité Controller for this frame to assign more bandwidth for this card's streaming output. Only one card in the frame can use this feature. It has no effect unless you have selected *Fast* for the refresh rate. The actual slot number of this card, as shown in the window title bar, will appear when the checkbox is ticked.

VIDEO PROBE sub-tab:

The Video Probe tab is only available if the probing options have been enabled via the activation code in the options tab (p. 15). It allows the user to establish conditions under which a detected error is flagged and reported. The top parameter in the list is selected when you open the view, indicated by the darker color of its name box. To select any other parameter, click on it.

To the right of the parameter list appear all the controls necessary to configure the selected parameter.

The parameter configuration panel usually includes, from top to bottom:

**Enable:** a checkbox to enable the alarm associated with this parameter

**Threshold:** a threshold value for detection of an error. The error will be detected when the measured parameter falls above (or below, depending on the nature of the parameter) the indicated threshold value. The values are those of the equivalent analog signal. In most cases this is a slider with data entry box.

Below the THRESHOLD slider are found slider bars allowing the configuration of the conditions under which a detected error is flagged and reported. These conditions are repeated in each of the following parameter sub-tabs:

**ERROR DURATION:** the length of time during which a parameter is allowed to be out-of-tolerance without being identified as an error. This is useful for situations such as a hard switch or patch of a video signal where there is a discontinuity in the signal which the user has deliberately caused and does not need to be flagged as an error. If a parameter is continuously out of tolerance for the specified duration, then an error is considered to have been detected. However, this error will not be flagged (causing the status LED to change color and an error message to be sent out on the frame's interface) until the OCCURRENCE / DETECTION WINDOW conditions have been satisfied. (Range: 0 to 90 seconds)

**OCCURRENCE:** the number of times that a detected error is allowed to occur in a specified DETECTION WINDOW before an error flag is set, and the error is reported (status LED changes color, and message sent on the interface) (Range: 1 to 16)

**INTERVAL:** the time duration during which errors are counted to determine if the error flag should be set. This is a moving window, e.g. the previous 2 minutes, and only errors falling within that window are counted. (Range: 1 min to 24 hours)

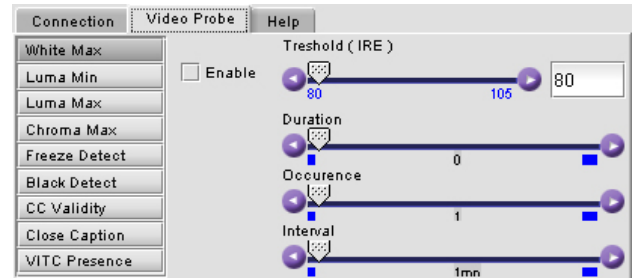
In all cases except one (CC presence), all three conditions are defined:

The CC Validity parameter has only ERROR DURATION, with a range of 1 to 250 seconds.

**White Max:** Detects whether the maximum luminance level of the input video signal is too high by verifying if it does not rise above a specified threshold.

**ENABLE:** check to enable this test.

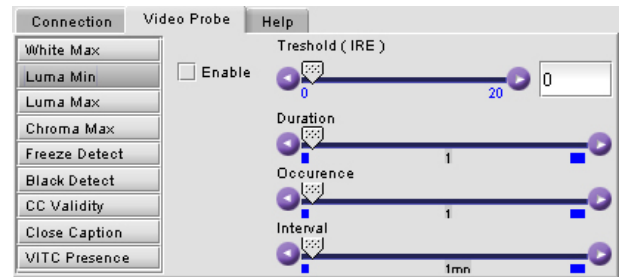
**THRESHOLD:** set the level (in IRE or mV) above which this condition will be flagged



**Luma Min:** Detects whether the video signal contains some nearly-black information by verifying if the Luma component of the video signal includes information below a specified threshold.

**ENABLE:** check to enable this test.

**THRESHOLD** set the level (in IRE or mV) below which this condition will be flagged

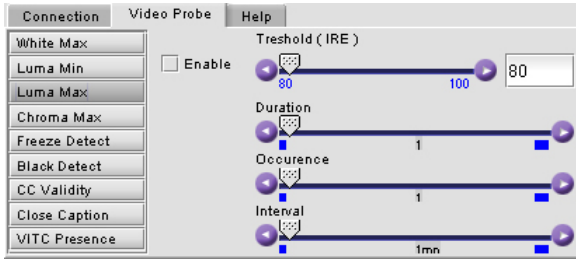


**Luma Max:** Detects whether the video signal contains some nearly-white information by verifying if the Luma component of the video signal includes information above a specified threshold.

**ENABLE:** check to enable this test.

**THRESHOLD:** set the level (in IRE or mV) above which this condition will be flagged

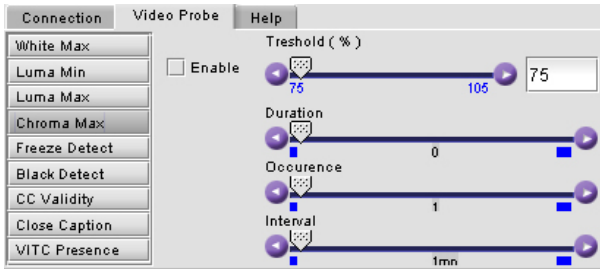
# DEC-1021 12-Bit Composite to SDI Decoder Guide to Installation and Operation



**Chroma Max:** Detects whether the amplitude of the chroma information in the video signal is too high by verifying if the peak chrominance of the input video signal is less than a specified threshold.

**ENABLE:** check to enable this test.

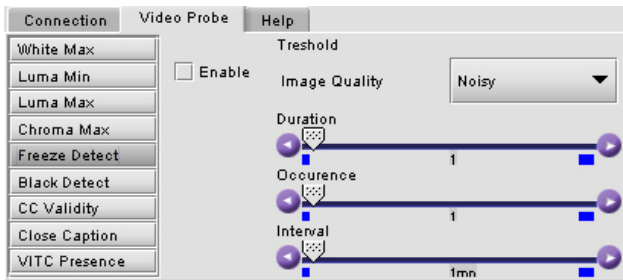
**THRESHOLD:** set the level (in %) above which this condition will be flagged



**Freeze Detection:** Detects whether a sequence of video frames are identical by verifying if it has been detected on the input signal, taking account of noise.

**ENABLE:** check to enable this test.

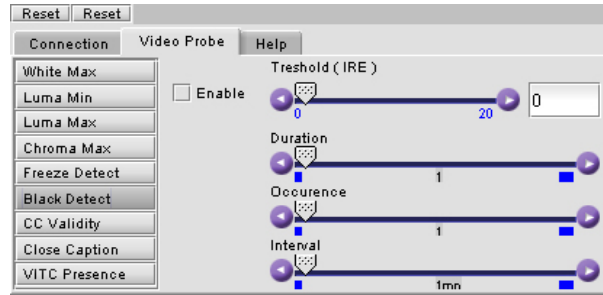
**VALUE:** select an image quality to be used as a reference in determining whether the current image is frozen. Choices are Noisy, Normal and HiQ.



**Black Detection:** Detects whether a sequence of video frames contains only black on the input signal.

**ENABLE:** check to enable this test.

**THRESHOLD:** set the level (in IRE or mV) below which this condition will be flagged

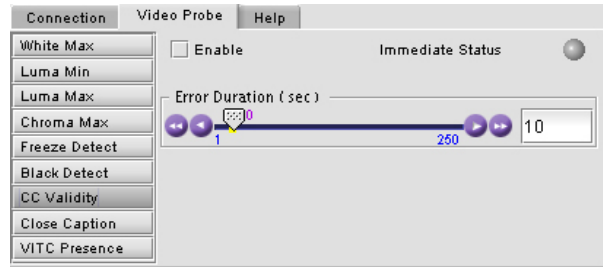


**CC Validity:** Detects the validity of Closed Captioning (CC) information in the VBI of the input video signal.

**ENABLE:** check to enable this test

**IMMEDIATE PRESENCE STATUS:** shows the current status of CC; green for present, and red for absent.

**ALARM CONFIG:** use the slider to set the Error Duration; the period during which CC must be continuously absent before the CC Presence error will be flagged



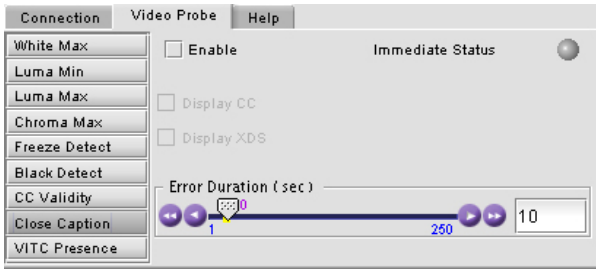
**Close Caption:** Detects the presence of Closed Captioning (CC) information in the VBI of the input video signal.

**ENABLE:** check to enable this test.

**IMMEDIATE PRESENCE STATUS:** shows the current status of CC – green for present, and red for absent.

**DISPLAY CC, DISPLAY XDS:** Enables the parsing and the display of the Closed Captioning and the XDS.

**ALARM CONFIG:** use the slider to set the Error Duration; the period during which CC must be continuously absent before the CC Presence error will be flagged

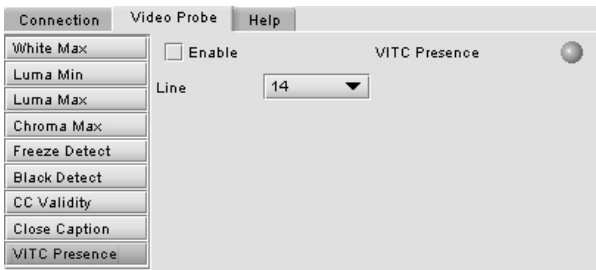


**VITC Presence:** Detects the presence of the input Time Code from a predetermined input line.

**ENABLE DETECTION:** check to enable this test

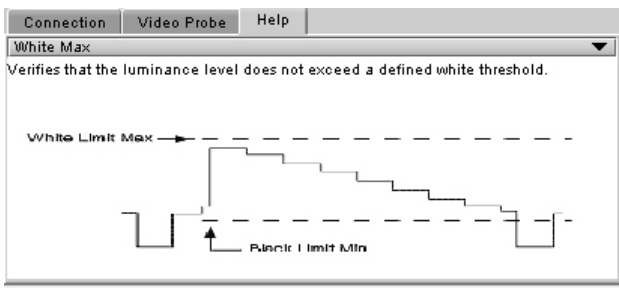
**IMMEDIATE PRESENCE STATUS:** show the current status of VITC – green for present, and red for absent.

**LINE:** Determines the input line monitored for the Time Code detection.



**HELP sub-tab:**

Gives additional information on each of the parameters measured by the Video Probe. Click on the pull down box at the top of the panel to select the desired parameter.

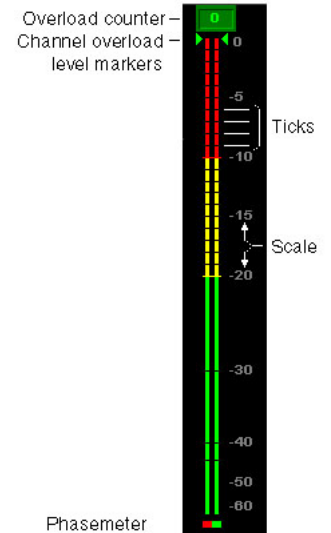


## Ralm

Click on the RALM button at the left side of the DEC-1021 control panel to open this view in the main window. The Real-time Audio Level Meter (RALM) visually displays the status of each audio channel present. Channels are displayed in pairs, so up to four meters will be present in the meter display window.

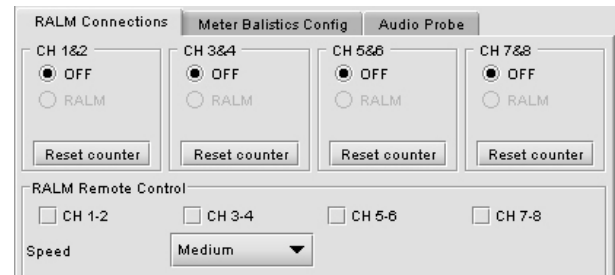
The meter is divided into three zones, and the dividing points and color of each zone are individually configurable under the *Meter Ballistics Config* tab

The *Overload Counter* shows a running count of the number of overloads detected. The Overload level is shown by a marker beside the meter, and its position can be set under the *Meter Ballistics Config* tab



The *Phasemeter* is a small meter that represents the phase correlation factor. Nominal position is in the center, which indicates the absence of signal. The red side of the meter (left hand) indicates the level of phase opposition and the green side of the meter (right hand) indicates the level of phase amplitude

**RALM CONNECTIONS sub-tab:** applies to local display in the iControl panel.

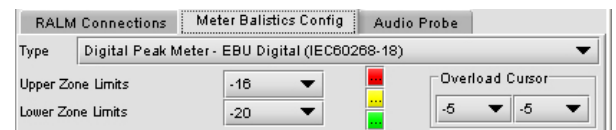


**CH 1&2, CH 3&4, CH 5&6 and CH 7&8:** audio meters for each pair of channels may be turned on (RALM) or OFF. Note: you need to check the desired channels in the *Audio Probe Remote Control* sub-section below in order to enable the RALM button.

**Reset counter:** click this button to reset the overload counter to zero.

**METER BALLISTIC CONFIG sub-tab:**

**TYPE** pull-down box: this pull-down offers a list of the available meter types, whose ballistics are identified by the standard to which they conform.



**UPPER ZONE LIMITS (dB):** 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)



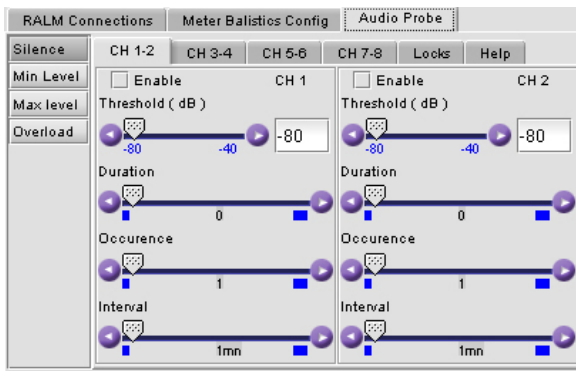
# DEC-1021 12-Bit Composite to SDI Decoder Guide to Installation and Operation

**LOWER ZONE LIMITS (dB):** 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 (dB):**The overload cursor appears on the meter as an arrowhead in the meter scale. The two pulldown boxes set the position of the overload cursor on the left and right meters (the range of values shown in the pull-down list depends on the type of meter selected).

**AUDIO PROBE sub-tab:** allows the user to adjust parameters of the audio encoded in the output SDI signal.



**SILENCE, MIN. LEVEL, MAX. LEVEL, OVERLOAD tabs:** using the slider bars, set error alarms for the different audio parameters (Threshold, Duration, Occurrence and Interval) on the specified channel; *CH 1-2, CH 3-4, CH 5-6 or CH 7-8 tabs.* See page 10 for details on the parameters. Check the **ENABLE** checkbox to enable the alarms.

**LOCKS tab:** allows the user to lock the alarm settings for each channel.

**HELP tab:** gives the user basic information on the different audio parameters.

## Status display

	Current				Latch			
Silence	1 5	2 0	3 7	4 8	1 5	2 0	3 7	4 8
Min Level	1 5	2 0	3 7	4 8	1 5	2 0	3 7	4 8
Max Level	1 5	2 0	3 7	4 8	1 5	2 0	3 7	4 8
Overload	1 5	2 0	3 7	4 8	1 5	2 0	3 7	4 8
	Reset				Reset			

**Current status** shows the status now. **Latched status** shows the status as affected by latching. When an error is detected on a channel, it's flagged in both sections by turning red. When the error disappears, the current status returns to green but the latched status stays marked as errored. Both status can be manually cleared by using the reset button. Only the parameters that have been enabled are reported in the current status list; the others are greyed out. Each alarm node monitors a channel (from 1 to 8).

## Blanking

Control over VBI data is achieved using the Blanking tab.



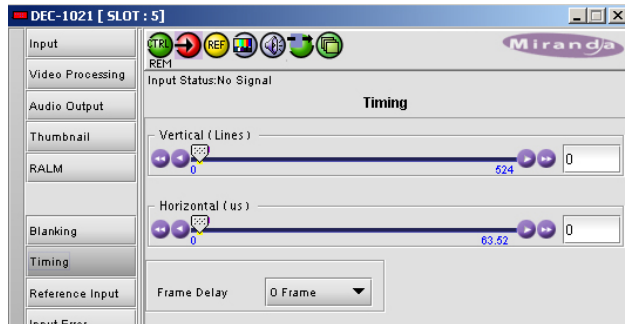
**VBI: PROCESS, PASS, BLANK, LINE BY LINE:** select whether the overall VBI data field will be processed, will pass or be blanked. If *Line By Line* is selected, use the right-side panel to set each line individually.

**LINE BY LINE:** Available when Line by Line is checked in the previous section. Radio buttons allow the selection of conditions for each line of the VBI data field.

**CC (525) / WSS (625):** if CC or WSS data are present in the signal, you may check this box to allow this data to pass-through unaffected.

### Timing

These controls provide access to timing adjustments which affect the signal outputs. There are two slider controls, each with a data reporting box which shows the current value, and into which values can be typed directly. If the Frame Sync option is not enabled, only the Horizontal delay may be accessed.



**VERTICAL (Lines):** 0, 1 ..., 523, 524 (for 525 operation), 623, 624 (for 625 operation): sets the number of lines for vertical delay. This control is available when the *Frame Sync option* has been activated (see *Options* tab).

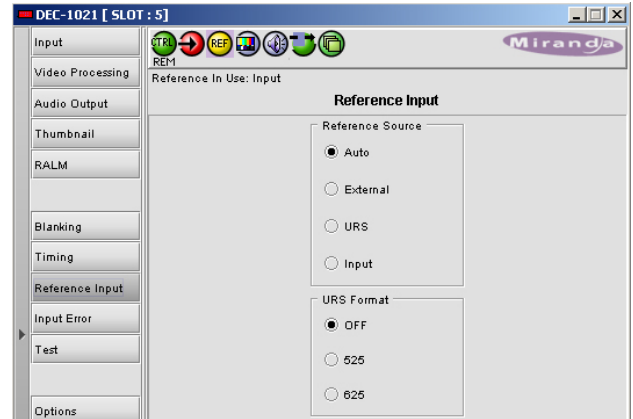
**HORIZONTAL ( $\mu$ s):** 0, 0.037, 0.064 ..., 63.5 (for 525 operation) ..., 64 (for 625 operation): sets the horizontal delay in  $\mu$ s.

**FRAME DELAY Pulldown box:** sets delay by frame steps: 0, 1 or 2 frames. This control is available when the *Frame Sync option* has been activated (see *Options* tab p. 15).

### Reference Input

These controls allow selection of the reference signal.

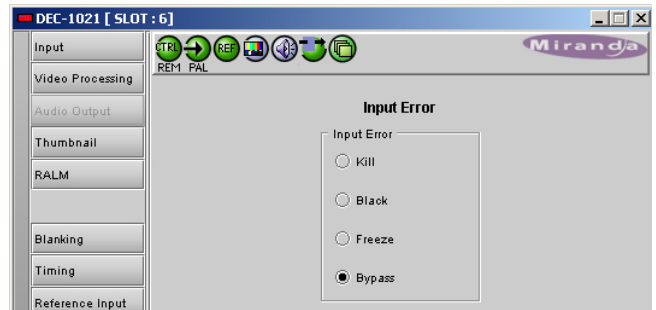
**REFERENCE SOURCE:** Select between *AUTO*, *EXTERNAL* (use the REF input signal connected to the rear panel), *URS* (see below) or *INPUT* (use the input video signal as reference) as the reference source. *AUTO* mode searches for available signal in this order: REF input, URS and finally video input signal.



**URS<sup>1</sup> FORMAT (not available at this time):** Select between OFF, 525 or 625 for the Universal Reference Signal format.

### Input Error

**INPUT ERROR: KILL, BLACK, FREEZE, BYPASS:** Sets card behavior when an input error is detected. When *KILL* is selected, the card will kill the output; *BLACK* will generate a video black at the output, and *FREEZE* will freeze the last video frame before the error was detected. *BYPASS* passes the input through as received.



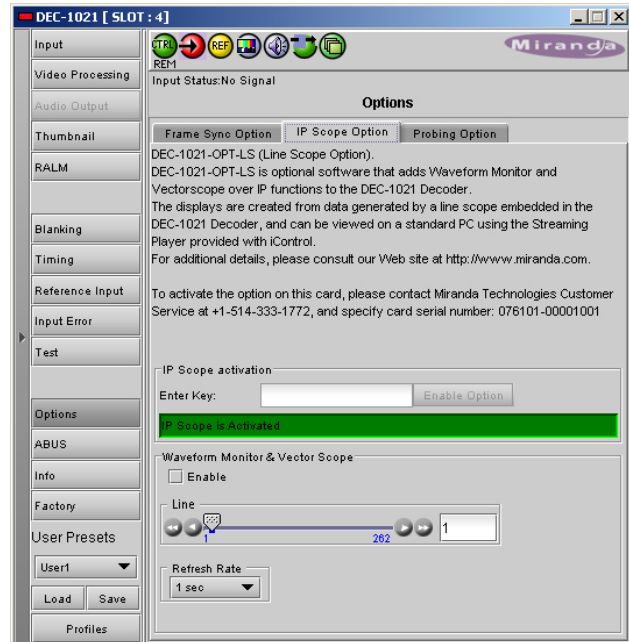
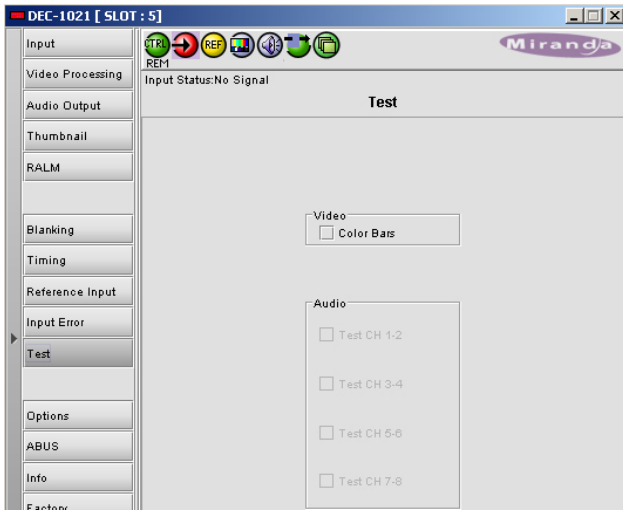
### Test

**VIDEO:** check the box to select a 75% color bar test signal at the output.

**AUDIO:** an audio tone may be selected for each of the 4 channel pairs. Check the box for the desired channel pair.

<sup>1</sup> The URS is a single signal that is capable of distributing to all cards in a Densité frame a frequency reference and frame alignment references for all video and audio signals.

# DEC-1021 12-Bit Composite to SDI Decoder Guide to Installation and Operation



**IP SCOPE Option:** to activate this option, you must obtain a licence key from Miranda Technologies. Type in the licence key in the box. Depress the ENABLE OPTION to enable the waveform monitor and vector scope feature. To view the waveform monitor and vector scope data, use the Streaming Player that is provided with the iControl software. Consult the iControl documentation to learn more about the Streaming Player. Depress the ENABLE checkbox to enable the waveform monitor and vector scope data transmission, and select the line that will carry the data using the slider below. The REFRESH RATE pulldown box selects the desired refresh rate: Fast, 1 sec, 2 sec, ..., 9 sec, 10 sec.

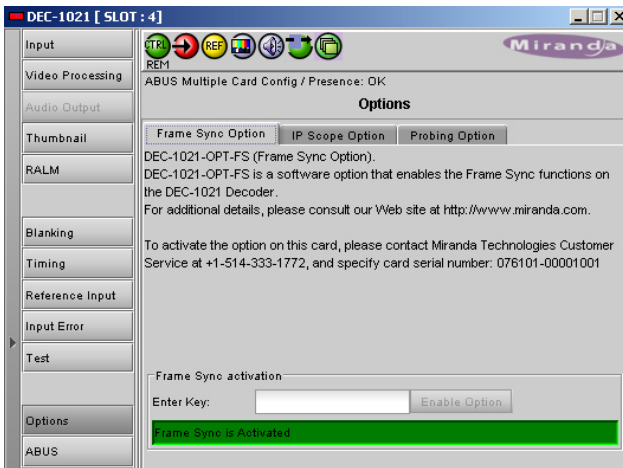
**PROBING Option :** to activate this option, you must obtain a licence key from Miranda Technologies. Type in the licence key in the box. Depress the ENABLE OPTION to enable probing controls.

## Abus

When optional audio cards such as the UAP-1781 are used to provide additional audio signals, the ABUS audio bus links installed audio cards and the DEC-1021. The ABUS tab is used to instruct the DEC-1021 about the presence of installed audio cards.

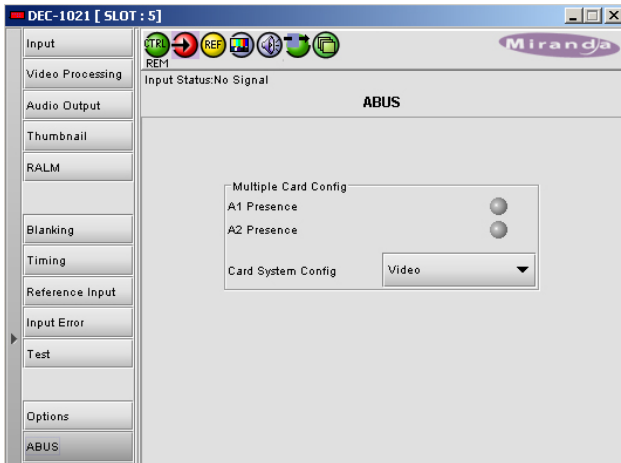
## Options

Three options are available for the DEC-1021: the Frame Sync option (DEC-1021-OPT-FS), the Line Scope over IP option (DEC-1021-OPT-LS) and the probing option (DEC-1021-OPT-PR).



**FRAME SYNC Option :** to activate this option, you must obtain a licence key from Miranda Technologies. Type in the licence key in the box. Depress the ENABLE OPTION to enable additional timing controls.





**MULTIPLE CARD CONFIG sub-section:** The indicators signal the presence of UAP-1781 cards installed in the chassis. To enable the audio bus, use the pull-down box and select your system's configuration. Selecting *Video* restricts available audio signals to audio channels embedded in the SD input signal; *Video / A1* or *Video / A1 / A2* adds signals incoming from the installed audio cards detected.

**Info**

The Info tab provides the user with information about the DEC-1021 card.



The boxes titled *Label*, *Short Label* and *Comments* are editable; the user can enter their own information.

The *Advanced* button displays the card's unique ID within the iControl system, identifying the DEC-1021 card, the slot and frame into which it is installed, and the URL and port of the frame on the network.

The *Remote System Administration* button at the bottom of the window opens a data entry box titled *Joining Locators*, in

which the ADD option opens a dialog box in which the user can identify the Locator by its URL.

**Factory**

The Factory tab contains a LOAD FACTORY button and an Auto-Calibration mode button.

**Load Factory:** Clicking this button will reinstate all default parameter values. The DEC-1021 Menu on pages 4-6 shows the default value underlined for all parameters.



**Auto-Calibration (Color Bars):** when a 100% color bar test signal is present at the input, you may use this button to enable an auto-calibration mode.

**User Presets**

The DEC-1021 has memory registers which can hold up to 5 user-defined parameter settings. Select the register to be used through the pull-down box at the bottom of the left area (the current selection is shown). Then click *Save* to store the current configuration in that register.

To recall a saved configuration, select the register through the pull-down box, then click *Load*.



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## **COMPLIANCE**

### **Radio Frequency Interference and Immunity**

This unit generates, uses, and can radiate radio frequency energy. If the unit is not properly installed and used in accordance with this guide, it may cause interference with radio communications. Operation with non-certified peripheral devices is likely to result in interference with radio and television reception. This equipment has been tested and complies with the limits in accordance with the specifications in:

FCC Part 15, Subpart B;                      CE EN50081-1:1992;                      CE EN50082-1:1992.

## **CONTACT MIRANDA**

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