(DENSITÉ) SERIES

DEC-1001

DESCRIPTION

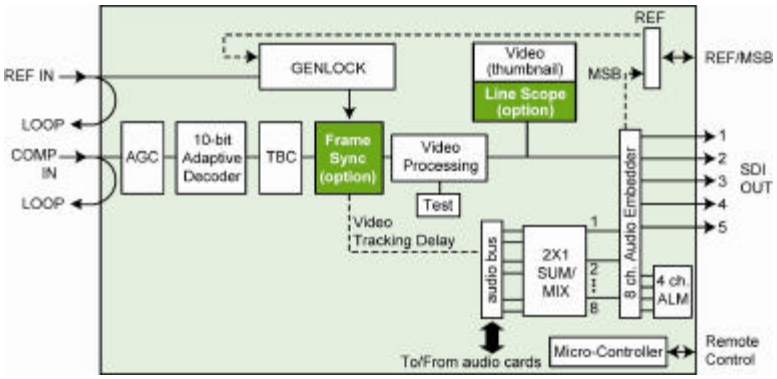
The DEC-1001 is a high-quality composite analog video to SDI decoder designed for incoming feed applications. This 10-bit decoder offers 2D adaptive decoding filters, video proc-amp functions, VBI data processing, AGC, input validity and error detection reporting. A frame sync with TBC functions is optional. 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 digital video outputs
- Reference input with passive loop-through
- 10-bit A to D conversion with 2D adaptive decoding
- Video processing control
- Ancillary Data Blanking or pass-through
- Automatic user calibration of components based on a known test pattern
- 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)

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

INPUT

SIGNAL:	NTSC (525/60) SMPTE 170MPAL (625/50) ITU-R BT470-6PAL-M (525/60) ITU-R BT470-6SECAM ITU-R BT470-6with passive loop-through
RETURN LOSS:	>35 dB up to 5.75 MHz
COUPLING:	DC
LEVEL:	2 Vpp max
IMPEDANCE:	75 O bridging

REFERENCE IN

SIGNAL:	NTSC SMPTE 170M / PAL ITU-R BT470-6reference black signal with passive loop-through
RETURN LOSS:	> 35 dB up to 5.75 MHz

SDI OUT

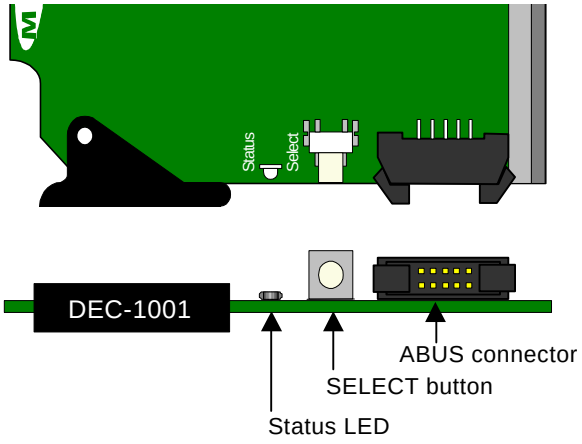
SIGNAL (5):	SDI SMPTE 259M-C (270 Mbps) + SMPTE 272M-C
RETURN LOSS:	> 15 dB up to 270 MHz
JITTER:	< 0.2 UI (0.74ns) pp (WIDEBAND)

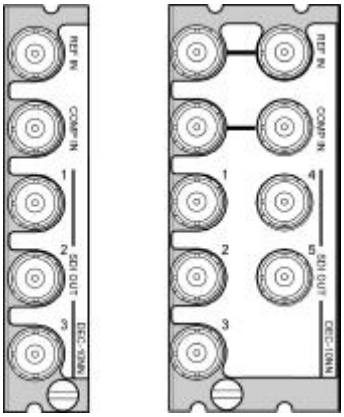
VIDEO PROCESSING PERFORMANCE

QUANTIZATION:	10 Bits
SAMPLING:	8fsc (2X oversampling)
FREQU. RESPONSE:	± 0.1 dB up to 5.5 MHz
NOISE:	< -58 dB up to 5,75MHz (UNWEIGHTED)
PROCESSING DELAY:	110 µs (min)
2T K FACTOR:	< 1%
DIFFERENTIAL GAIN:	< 1%
DIFFERENTIAL PHASE:	< 1 degree
LNL:	< 1%

MISCELLANEOUS

TEST GENERATOR:	75% color bars with 100% white bar
POWER:	5W





Single Double
DEC-1001 Rear Connector Panel

INSTALLATION

Make sure you have ordered and received the DEC-1001 and its associated rear panel. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

* DEC-1001 10-Bit Composite to SDI Decoder
* DEC-10NN-SRP or DEC-10NN-DRP Rear Panel (see figure)

The DEC-1001 must be mounted in a DENSITÉ frame. The installation includes both the DEC-1001 module, and the rear panel module. It is not necessary to switch off the power from these frames when installing or removing the DEC-1001 .

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-1001 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 central controller card, located in the center of the frame, it is equipped with an LCD display and a control panel. The controller handles error reporting and local and remote control for all cards installed in the frame. The display and control panel are assigned to the card in the frame whose SELECT button has been pushed.

User Interface

Pushing the SELECT button will cause the on-card STATUS LED to flash yellow, and the card identification and the current status will be shown on the controller card's display. The STATUS LED will revert to it's normal state upon a second push of the button, or after a short delay. The messages which may appear are shown in the top line of the menu chart on page 3

Status Monitor LED

The status monitor LED is located on the front card-edge of the DEC-1001 module, and is 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).

A "Flashing Yellow" Status LED indicates that the SELECT button on the front panel has been pushed, and the controller display and control panel are now assigned to this card.

The LED color assignments for some error conditions can be reconfigured by the user (see the chart and menu for details).

Example :

-SELECT button pushed twice when there is no input signal connected to the rear panel and the LED is steady red:

D	E	C	-	1	0	0	1								
N	O		S	I	G	N	A	L							

Use the local control panel to access the detailed status report shown in the STATUS menu below.

	Serial Report	GPI Report	Green	Yellow	Red	Flashing Red
No input signal presence					✪	
Reference mismatch					✪	
No reference					✪	
Input Format Error					✪	
Test				✪		
Card System					✪	

✪ : Factory default

iControl Menus

iControl is Miranda's graphical user interface. Users can remotely access and operate many Miranda products from a remote computer via an IP interface. The iControl window contains several elements to display statuses and IDs of the cards being controlled; to learn more consult the iControl User's Guide.

Before accessing to the DEC-1001 menus you need to establish the IP connection to the computer and the frame containing the DEC-1001 card.

Input tab

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-1001 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 N*TSC B&W* or *PAL B&W* to accept a black and white input.

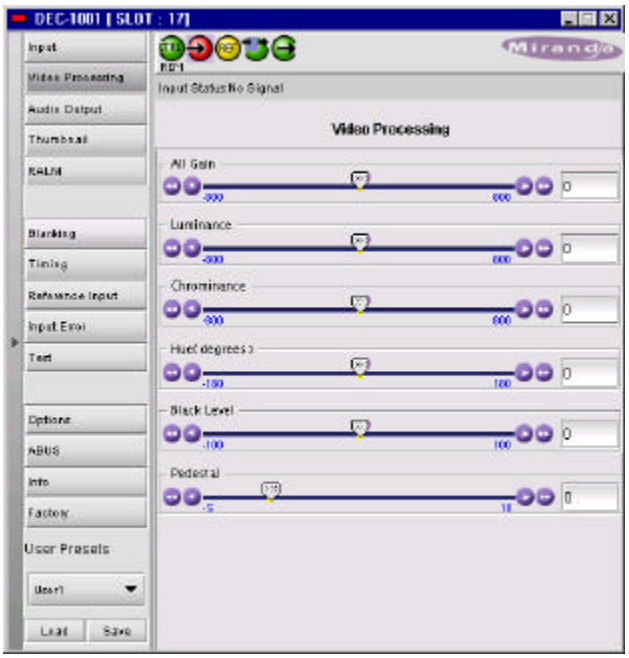
OPERATION MODE: Satellite, STUDIO, VCR: Select *STUDIO* source type when using high quality sources, *SATELLITE* for satellite sources, and *VCR* for unstable sources.

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

Video Processing tab (next page)

These controls reflect the type of output selected: *NTSC* or *PAL-M* (composite), *GBR, YUV* or *Betacam.*

ALL GAIN: -800, -799, …, 799, 800: Sets luma and chroma gains to a specific value. When others 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:-180, -179, …, 180: Sets hue to a specific value in degrees.

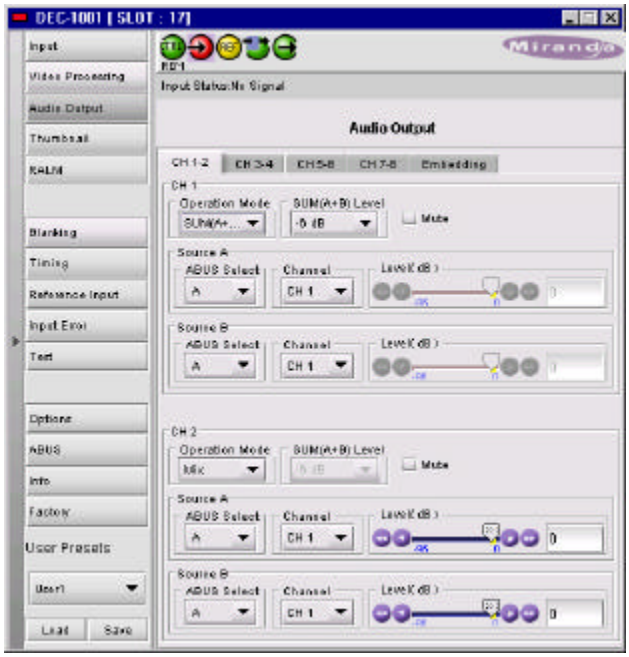
G GAIN; B GAIN; R GAIN: -800, -799, …, 139, 140: In RGB mode, sets the gains for the individual components of the video signal to a specific value.

Y GAIN; B-Y GAIN; R-Y GAIN: -800, -799, …, 799, 800: In YUV and BETACAM mode, sets the gains for the individual components of the video signal to a specific value.

BLACK LEVEL: -100, -99, …, 99, 100: 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.

Audio Output tab (with optional audio card)



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: This menu allows for each output signal the source selection between single channel and the sum or mix of two channels.

Off: The output channel is muted.

A: A single selected channel will be set the output among several sources. Its selection is done in sub-menu *SOURCE A*.

SUM (A+B):The sum of two channels selected amongs several sources with separate level adjustments. The two selections are done in sub-menus *SOURCE A* and *SOURCE B*.

Mix: The mono mix of two channels selected among several sources. The two selections are done in sub-menus *SOURCE A* and *SOURCE B*.

SUM (A+B) Level: –6 dB, -3 dB, 0 dB: when this mode is selected, an attenuation level may be applied to the sum of the 2 sources.

MUTE: to mute this channel check this box.

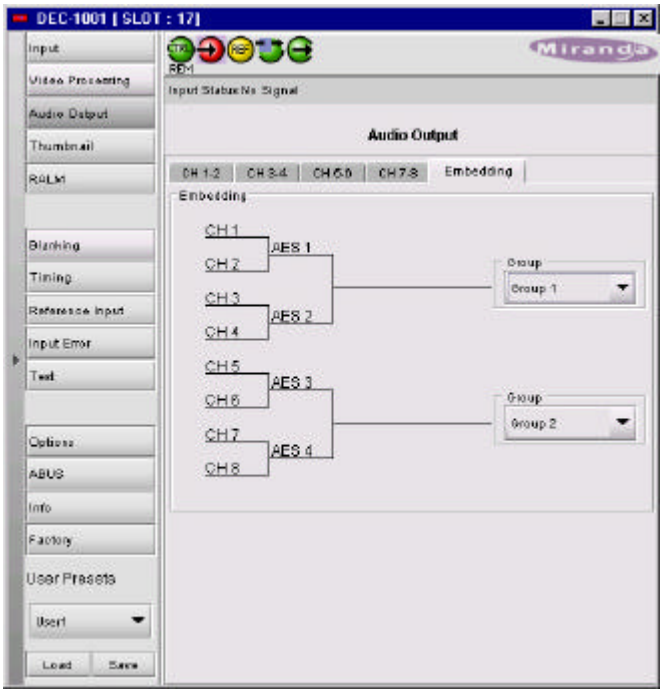
Source A & Source B*: ABUS Select: A1, A2*: selects the Audio Bus to be used as source for this channel (*A1* or *A2*).

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 to the source.

EMBEDDING Tab:

CH1,2,3,4, and *CH 5,6,7,8:* the pulldown box allows to choose the AES audio group to be used for embedding audio channels 1 to 4 and 5 to 8.



Thumbnail tab

Thumbnails are used to monitor the video output signal of the DEC-1001. Streaming parameters are set using these controls.

ENABLE: OFF, VIDEO: enables thumbnail streaming or turn streaming OFF

SIZE: SMALL, MEDIUM, LARGE: select 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-1001.
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.

RALM tab

The Real-time Audio Level Meter (RALM) visually displays the status of each audio channel present.

The meter is divided into three zones:

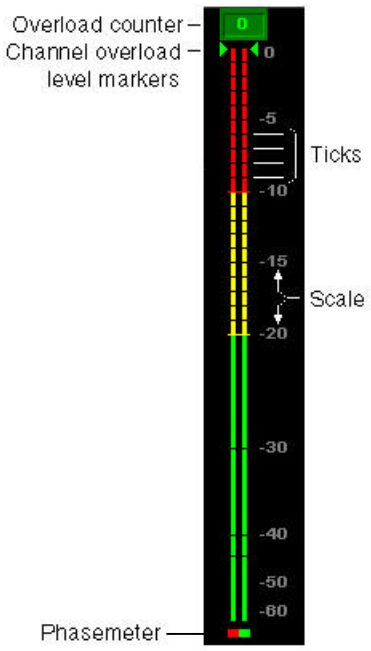
The dividing points are specified in the Upper Zone Limits and Lower Zone Limits boxes. Click in the box and scroll to the desired value.

The color of the meter in each zone is selectable. Click on the colored square corresponding to the zone to open a color selection dialog.

The level at which the channel is to be considered in Overload can be specified using the Channels Overload boxes. Click in the box to see a scrollable list, and select the desired level.

The Overload Counter shows a running count of the number of overloads detected.

The Phasemeter is a minute meter that represent the phase correlation factor. Nominal position is in the center, which indicates the absence of signal. The red side, up to the left end of the meter indicates the level of phase opposition and the green side, up to the right end 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 button effectively reset the overload counter.

Audio Probe Remote Control sub-section:
allows the transmission of RALM data to the iControl server.

CH 1-2, CH 3-4, CH 5-6, CH 7-8 checkboxes*:* turn the meter off or on.

Speed: Slow, Medium or *Fast:* select the meter refresh rate from the pull-down list, either fast, medium or slow.

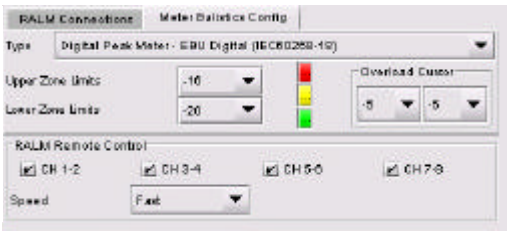
Meter Ballistic Config sub-tab:

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)

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).

Blanking tab

Control over VBI data is achieved using this 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 allows 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.

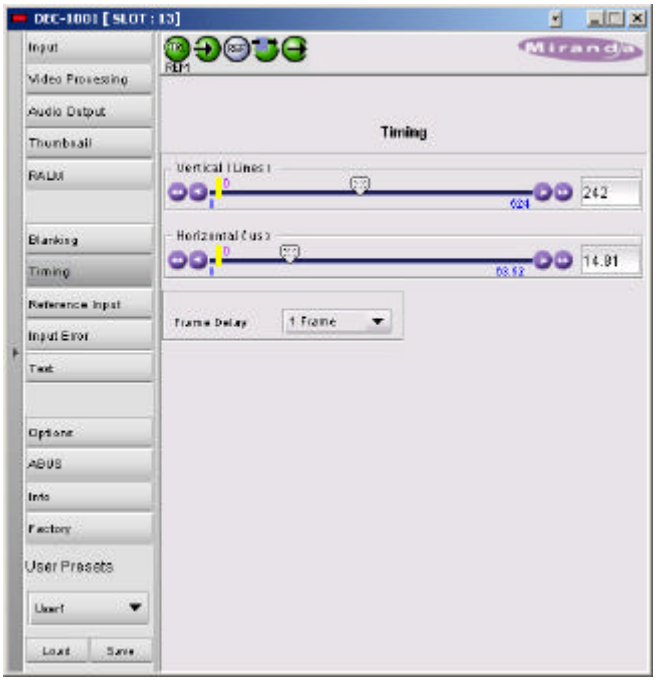
Timing tab

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 (µs): 0, 0.037,0.064 …, 63.5 (for 525 operation), …,64 (for 625 operation): sets the horizontal delay in µs.

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).



Reference Input tab

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[1] *FORMAT* ***(not available at this time)***: Select between OFF, 525 or 625 for the Universal Reference Signal format.

Input Error tab

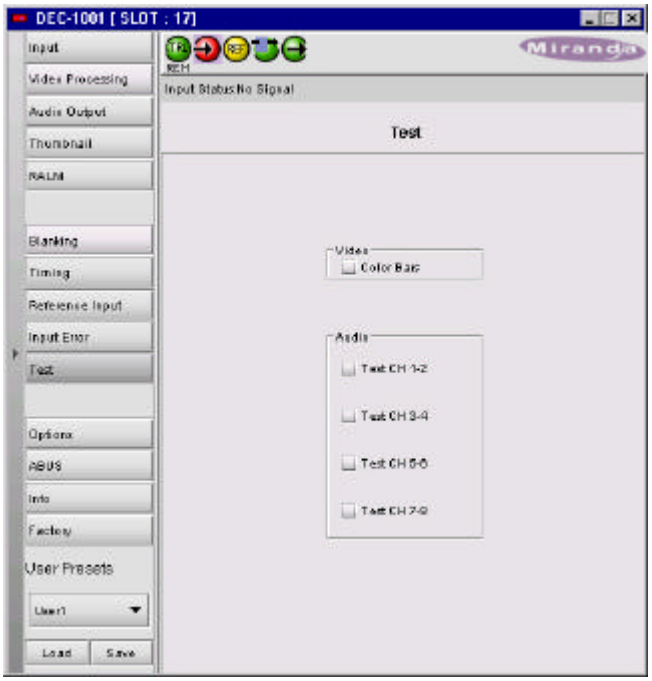
INPUT ERROR: KILL, BLACK, FREEZE: Sets card behavior when an input error is detected. When *KILL* is selected, the card will not take any action; *BLACK* will generate a video black at the output, and *FREEZE* will freeze the last video frame before the error was detected.

[1] [1]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.

Test tab

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 pair. Check the box for the desired channel pair.

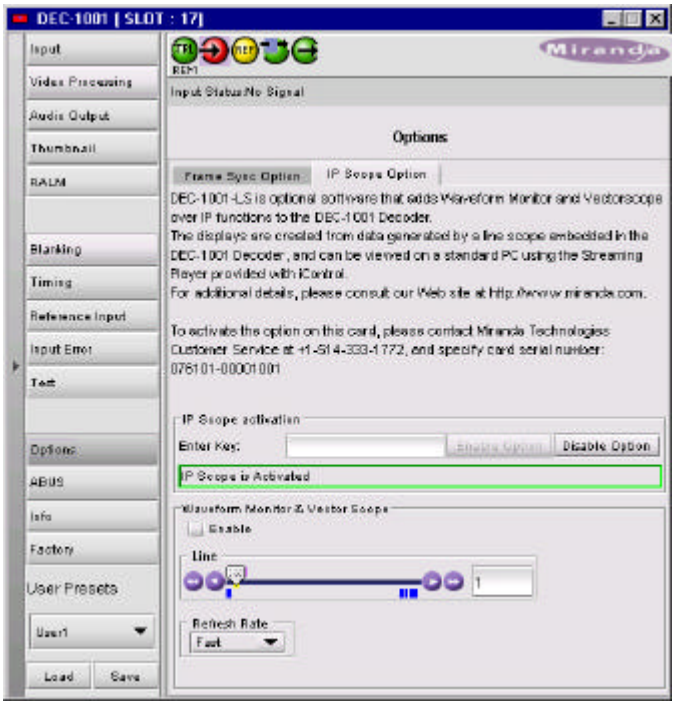


Options tab

Two options are available for the DEC-1001: the Frame Sync option (DEC-1001-OPT-FS) and the Line Scope over IP option (DEC-1001-OPT-LS).

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.

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*.



ABUS tab

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-1001. The ABUS tab is used to instruct the DEC-1001 about the presence of installed audio cards.

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 pulldown 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 tab

The Info tab provides the user with information about the DEC-1001 card.

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

The *Advanced* button displays the card's unique ID within the iControl system, identifying the DEC-1001 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 tab

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. See the DEC-1001 Menu below to see the default value 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

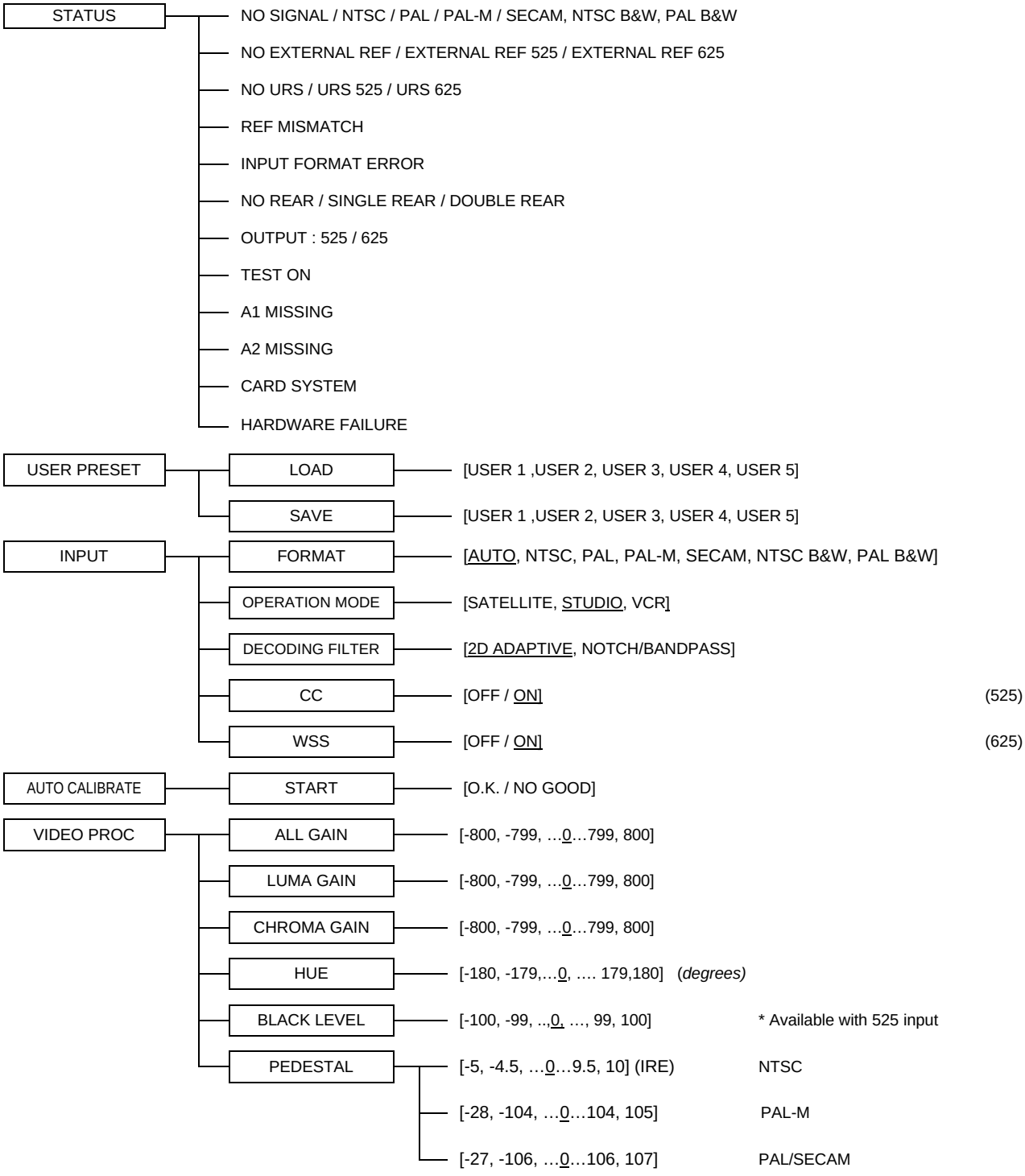
The DEC-1001 has memory registers which can hold up to 5 user-defined parameter settings. Select the register to be used through the pull-down box at the bottom of the left area (the current selection is shown). Then click *Save* to store the current configuration in that register.

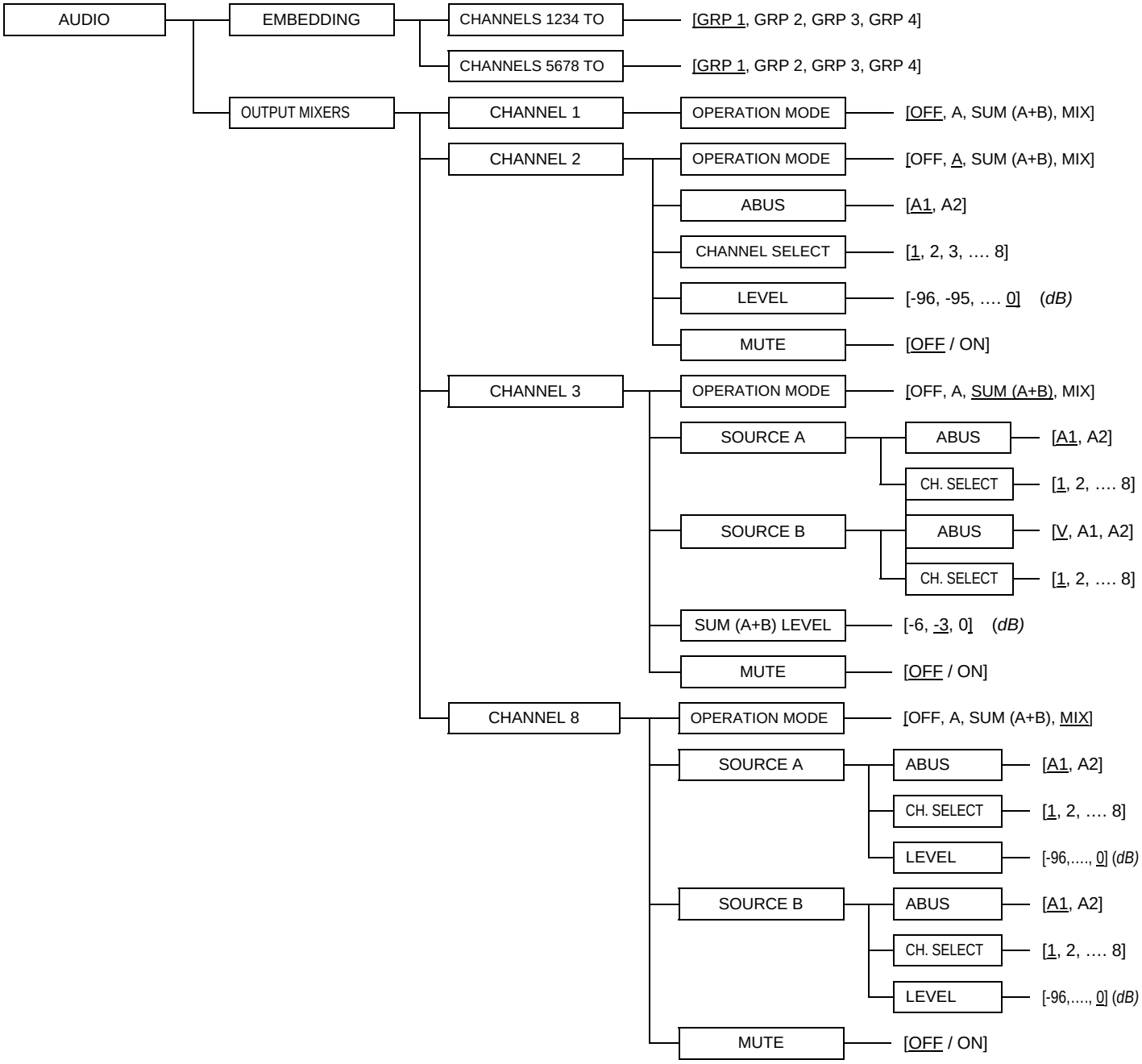
To recall a saved configuration, select the register through the pulldown box, then click *Load*.

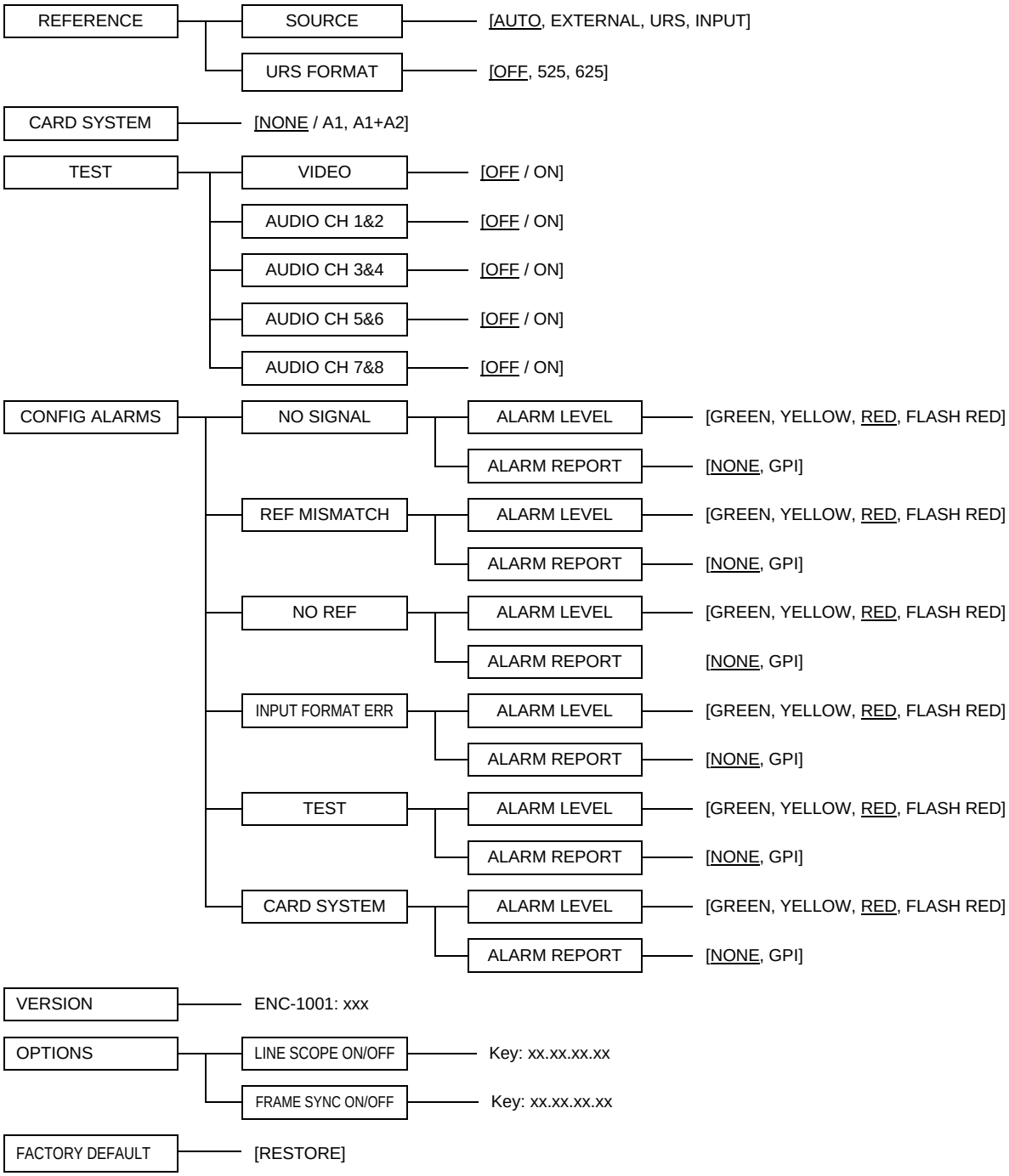
DEC-1001 Card Menu

Operating Parameter Adjustment

The DEC-1001 have operating parameters which may be adjusted locally at the controller card interface. After pressing the SELECT button on the DEC-1001 module, use the keys on the local control panel (described in the Controller card manual) to step through the displayed menu and adjust the parameters. The menus are shown below.




AUDIO
EMBEDDING
CHANNELS 1234 TO
[GRP 1, GRP 2, GRP 3, GRP 4]
CHANNELS 5678 TO
[GRP 1, GRP 2, GRP 3, GRP 4]
OUTPUT MIXERS
CHANNEL 1
OPERATION MODE
[OFF, A, SUM (A+B), MIX]
CHANNEL 2
OPERATION MODE
[OFF, A, SUM (A+B), MIX]
ABUS
[A1, A2]
CHANNEL SELECT
[1, 2, 3, …. 8]
LEVEL
[-96, -95, …. 0] (dB)
MUTE
[OFF / ON]
CHANNEL 3
OPERATION MODE
[OFF, A, SUM (A+B), MIX]
SOURCE A
ABUS
[A1, A2]
CH. SELECT
[1, 2, …. 8]
SOURCE B
ABUS
[V, A1, A2]
CH. SELECT
[1, 2, …. 8]
SUM (A+B) LEVEL
[-6, -3, 0] (dB)
MUTE
[OFF / ON]
CHANNEL 8
OPERATION MODE
[OFF, A, SUM (A+B), MIX]
SOURCE A
ABUS
[A1, A2]
CH. SELECT
[1, 2, …. 8]
LEVEL
[-96,...., 0] (dB)
SOURCE B
ABUS
[A1, A2]
CH. SELECT
[1, 2, …. 8]
LEVEL
[-96,...., 0] (dB)
MUTE
[OFF / ON]
BLANKING
VBI (10 – 20)
[PASS, BLANK, PROCESS, USER] (525)
LVBI (6 – 22)
[PASS, BLANK, PROCESS, USER] (625)
INPUT LOSS
KILL, BLACK, FREEZE FIELD
TIMING
FRAME DELAY
[0, 1, 2, 3]
VERTICAL
[0, 1, 2, …. 523, 524] (lines) (525)
[0, 1, 2, …. 623, 624] (lines) (625)
HORIZONTAL
[0, 0.037, 0.064, …. 63,5] (us) (525)
[0, 0.037, 0.064, …. 64] (us) (625)


REFERENCE
SOURCE
[AUTO, EXTERNAL, URS, INPUT]
URS FORMAT
[OFF, 525, 625]
CARD SYSTEM
[NONE / A1, A1+A2]
TEST
VIDEO
[OFF / ON]
AUDIO CH 1&2
[OFF / ON]
AUDIO CH 3&4
[OFF / ON]
AUDIO CH 5&6
[OFF / ON]
AUDIO CH 7&8
[OFF / ON]
CONFIG ALARMS
NO SIGNAL
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
REF MISMATCH
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
NO REF
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
INPUT FORMAT ERR
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
TEST
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
CARD SYSTEM
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
VERSION
ENC-1001: xxx
OPTIONS
LINE SCOPE ON/OFF
Key: xx.xx.xx.xx
FRAME SYNC ON/OFF
Key: xx.xx.xx.xx
FACTORY DEFAULT
[RESTORE]

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.

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