(DENSITÉ) SERIES

ENC-1101

DESCRIPTION

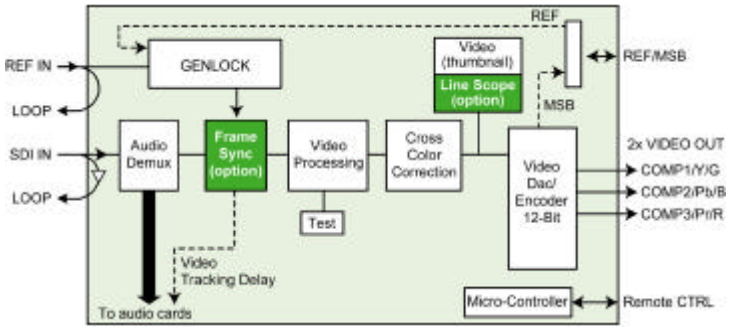
The ENC-1101 is a high-quality encoder with 12-bit conversion allowing operators to convert a SDI signal to Composite, CAV or RGB. The composite outputs can be NTSC, PAL or PAL-M and the component outputs can be SMPTE, BETACAM or GBR formats. With its on-board Genlock and Video Proc-Amp, the card provides flexible system integration. An optional Frame Sync provides infinite timing adjustment relative to an external reference. When embedded audio is required to be separated into discrete channels, the built-in audio demux (24-bit) allows up to 8 channels (2 groups) to be passed to an audio card. New technology includes thumbnail generation and an optional Waveform/Vectorscope over IP of the output signal which allows operators 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

- SDI isolated input w/active loop-through
- External reference input w/passive loop-through
- Up to six (6) Composite / two (2) CAV analog video outputs
- 12-bit D to A video conversion
- Line comb pre-filter selection for NTSC
- Video processing controls
- Hot-switch detection and handling
- Frame Sync Option provides timing, full phasing and freeze modes
- Thumbnail Generation
- Waveform/Vector over IP option (operates with iControl)
- Provides output to Monitoring Switching Bridge option (MSB-1121)
- De-embedding of 8 channels (2 groups) of audio to a linked audio card (ex: UAP-1781)

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

INPUT

SIGNAL:	SMPTE 259M-C (270 Mbps) isolated with active loop through
EMBEDDED AUDIO:	SMPTE 272M-A
CABLE LENGTH:	300 m (1000') of Belden 1694A
RETURN LOSS:	> 15 dB up to 270 MHz

EXTERNAL REFERENCE

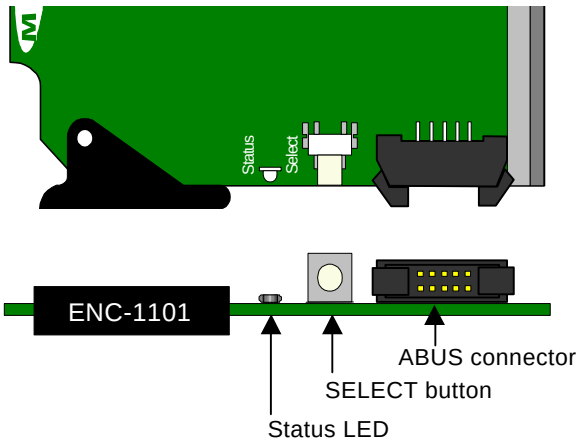
SIGNAL:	NTSC SMPTE 170M, PAL ITU 624-4 or Composite sync with passive loop-through
RETURN LOSS:	> 35 dB up to 5.75 MHz

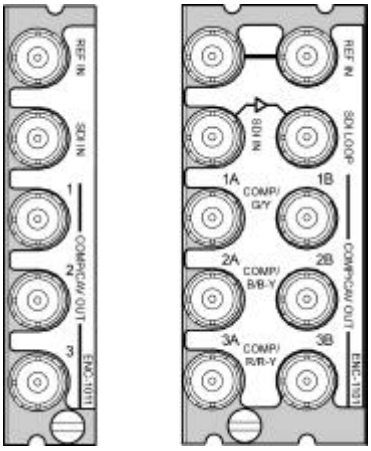
VIDEO OUTPUTS (6)

SIGNAL:	NTSC (525/60) SMPTE 170M, PAL (625/50) ITU 624-4, incl. PAL-M Component Analog (GBR with sync on G or Y/B-Y/R-Y) Betacam and SMPTE Levels
RETURN LOSS:	> 35 dB up to 5.75 MHz

VIDEO PROCESSING PERFORMANCE

SIGNAL PATH:	10 bits
QUANTIZATION:	10 bits
DAC:	12 bits
SAMPLING:	108 MHz (8X over-sampling)
FREQ. RESPONSE:	COMP./Y : ± 0.1dB to 5.5 MHz, +0/-0.6 dB from 5.5 to 5.75 MHzR-Y/B-Y : ± 0.15 dB to 2.0 MHz
NOISE:	< -60 dB to 5.75 MHz (UNWEIGHTED)
DIFFERENTIAL PHASE:	< 1.5 degree
DIFFERENTIAL GAIN:	< 1%
PROCESSING DELAY:	75 µs (min.)
TEST GENERATOR:	75% color bars
POWER:	5 W





Single Double

ENC-1101 Rear Connector Panel

INSTALLATION

Make sure you have ordered and received the ENC-1101 and its associated rear panel. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

* ENC-1101 SDI to Composite/CAV/RGB Encoder
* ENC-1101-SRP and ENC-1011-DRP Rear Panel (see figure)

The ENC-1101 must be mounted in a DENSITÉ frame. The installation includes both the ENC-1101 module, and the rear panel module. It is not necessary to switch off the power from these frames when installing or removing the ENC-1101 .

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 ENC-1101 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

The ENC-1101 has different output types: composite, CAV and RGB. Three composite outputs or one CAV/RBG output is available on the single-width rear panel; six composite outputs or two CAV/RGB outputs are available with the double-width rear panel.

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 ENC-1101 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:

E	N	C	-	1	1	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					✪	
No audio group 1				✪		
No audio group 2				✪		
No audio group 3				✪		
No audio group 4				✪		
Test				✪		
Card System					✪	

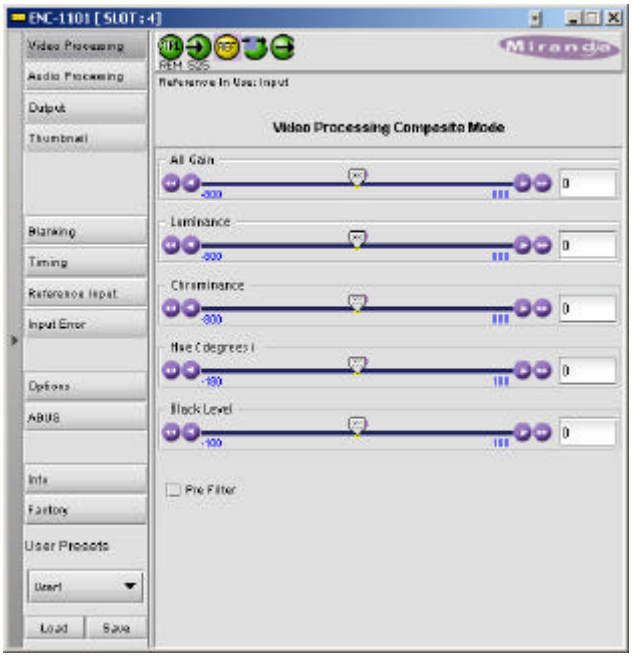
✪ : Factory default

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 ENC-1101 menus you need to establish the IP connection to the computer and the frame containing the ENC-1101 card.

Video Processing tab



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: In Composite mode, sets Luma gain to a specific value.

CHROMA GAIN: -800, -799, …, 799, 800: In Composite mode, sets Chroma gain to a specific value.

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.

HUE:-180, -179, …, 179, 180: Sets Hue to a specific value in degrees.

BLACK LEVEL: -100, -99, …, 99, 100: In NTSC mode, sets Black level to a specific value.

PRE FILTER: OFF, ON: In NTSC mode, applies a line comb pre-filter to the video input signal.

Audio Processing tab

Group Detected: highlights the AES audio groups detected in the input signal.

CH1,2,3,4, and *CH 5,6,7,8:* select the AES group to be used as source for channel 1 to 4 and 5 to 8.

Output tab

These controls allows the selection of the different output formats and parameters.

OUTPUT FORMAT: NTSC, PAL-M, GBR, YUV, BETACAM (for 525) or *PAL, GBR, YUV, BETACAM* (for 625): Sets the video output type.

VIDEO SETUP: O IRE, 7.5 IRE: In 525 lines operation, enables or disables 7.5 IRE units set-up on the output NTSC video signal.

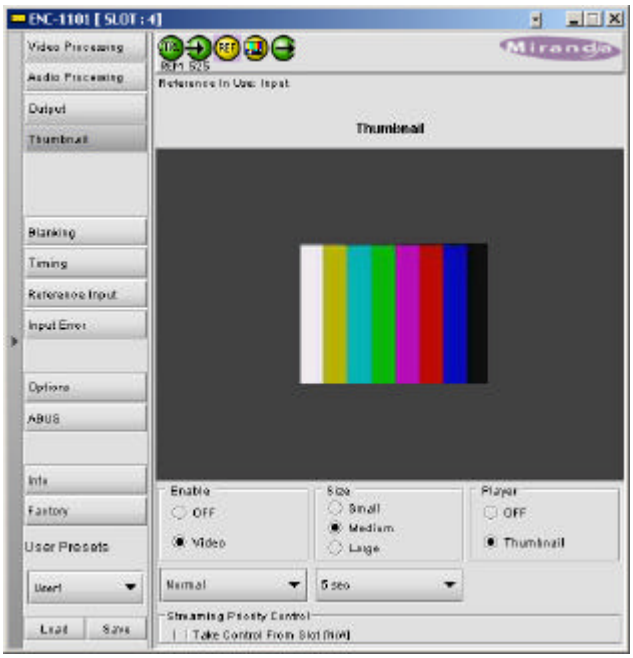
H BLANKING: WIDE, NARROW: Sets the value of the horizontal blanking interval.

CLOSE CAPTION: In 525 lines operation, check the box to enable 7.5 IRE units set-up on line 21 of the output NTSC video signal.

GAIN: -75, -74, …, 74, 75: Sets the value of the overall output gain; this gain modifies the amplitude of the analog video signal amplification.

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

Thumbnail tab



Thumbnails are used to monitor the video output signal of the ENC-1101. 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 ENC-1101.
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.

Blanking tab

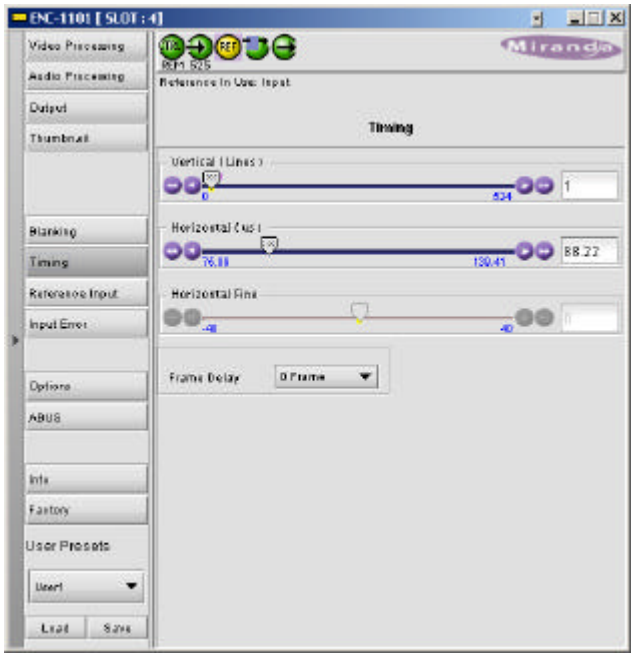
Control over VBI data is achieved using this tab.

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.

SETUP: check this box to enable a 7.5IRE setup on the VBI.

Timing tab



These controls provide access to timing adjustments which affect the signal outputs. There are three 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: 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): 69.7, 70, …, 132, 133.22 (for 525 operation), 133.7 (for 625 operation): sets the horizontal delay in µs.

HORIZONTAL FINE: -40, -39 …, 39, 40: provides fine adjustment for the horizontal delay. This control is available when the *Frame Sync option* has been activated (see *Options* tab).

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.

[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.

Input Error tab

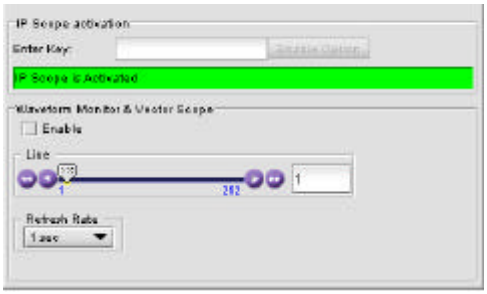
INPUT ERROR: KILL, BLACK, FREEZE: Sets card behavior when an input error is detected. When KILL is selected, the card will not take any action; BLACK will generate a video black at the output, and FREEZE will freeze the last video frame before the error was detected.

Options tab

Two options are available for the ENC-1101: the Frame Sync option (ENC-1101-OPT-FS) and the Line Scope over IP option (ENC-1101-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 ENC-1101. The ABUS tab is used to instruct theENC-1101 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 ENC-1101 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 ENC-1101 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.

User Presets

The ENC-1101 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*.

Factory tab

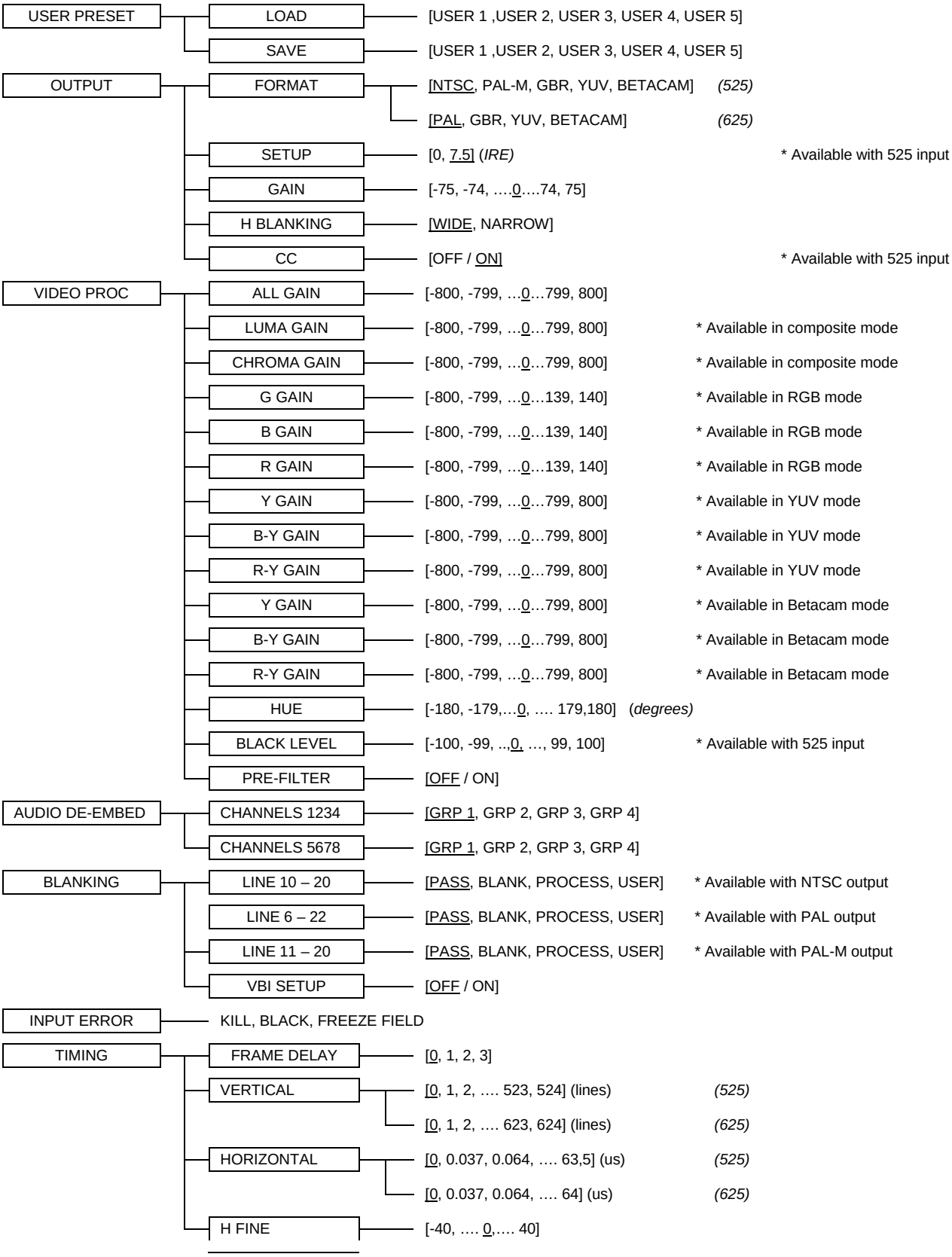
The Factory tab contains only LOAD FACTORY button. Clicking this button will reinstate all default parameter values. See the ENC-1011 Menu below to see the default value for all parameters.

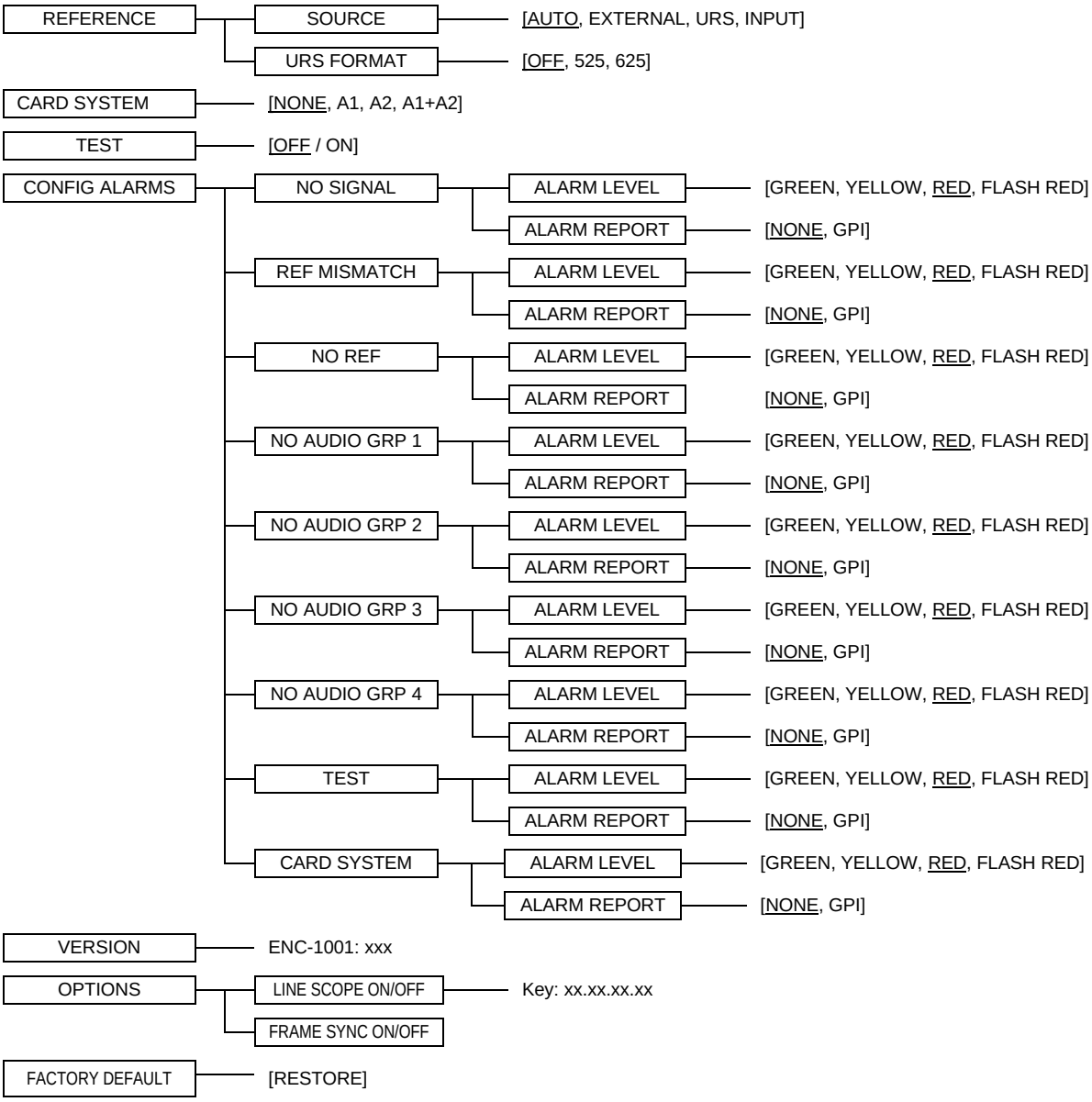
ENC-1101 Menu

Operating Parameter Adjustment

The ENC-1101 have operating parameters which may be adjusted locally at the controller card interface. After pressing the SELECT button on the ENC-1101 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; <u>underlined</u> values are factory defaults.

- STATUS
  - NO SIGNAL / SDI 525 / SDI 625
  - NO EXTERNAL REF / EXTERNAL REF 525 / EXTERNAL REF 625
  - NO URS / URS 525 / URS 625
  - REF MISMATCH
  - NO AES / AES GROUP: 1234
  - NO REAR / SINGLE REAR / DOUBLE REAR
  - OUTPUT : NTSC / PAL /PAL-M / GBR / YUV / BETACAM*)*
  - TEST
  - 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]
OUTPUT
FORMAT
[NTSC, PAL-M, GBR, YUV, BETACAM] (525)
[PAL, GBR, YUV, BETACAM] (625)
SETUP
[0, 7.5] (IRE)
* Available with 525 input
GAIN
[-75, -74, ….0….74, 75]
H BLANKING
[WIDE, NARROW]
CC
[OFF / ON]
* Available with 525 input
VIDEO PROC
ALL GAIN
[-800, -799, …0…799, 800]
LUMA GAIN
[-800, -799, …0…799, 800]
* Available in composite mode
CHROMA GAIN
[-800, -799, …0…799, 800]
* Available in composite mode
G GAIN
[-800, -799, …0…139, 140]
* Available in RGB mode
B GAIN
[-800, -799, …0…139, 140]
* Available in RGB mode
R GAIN
[-800, -799, …0…139, 140]
* Available in RGB mode
Y GAIN
[-800, -799, …0…799, 800]
* Available in YUV mode
B-Y GAIN
[-800, -799, …0…799, 800]
* Available in YUV mode
R-Y GAIN
[-800, -799, …0…799, 800]
* Available in YUV mode
Y GAIN
[-800, -799, …0…799, 800]
* Available in Betacam mode
B-Y GAIN
[-800, -799, …0…799, 800]
* Available in Betacam mode
R-Y GAIN
[-800, -799, …0…799, 800]
* Available in Betacam mode
HUE
[-180, -179,…0, …. 179,180] (degrees)
BLACK LEVEL
[-100, -99, ..,0, …, 99, 100]
* Available with 525 input
PRE-FILTER
[OFF / ON]
AUDIO DE-EMBED
CHANNELS 1234
[GRP 1, GRP 2, GRP 3, GRP 4]
CHANNELS 5678
[GRP 1, GRP 2, GRP 3, GRP 4]
BLANKING
LINE 10 – 20
[PASS, BLANK, PROCESS, USER]
* Available with NTSC output
LINE 6 – 22
[PASS, BLANK, PROCESS, USER]
* Available with PAL output
LINE 11 – 20
[PASS, BLANK, PROCESS, USER]
* Available with PAL-M output
VBI SETUP
[OFF / ON]
INPUT ERROR
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)
H FINE
[-40, …. 0,…. 40]


REFERENCE
SOURCE
[AUTO, EXTERNAL, URS, INPUT]
URS FORMAT
[OFF, 525, 625]
CARD SYSTEM
[NONE, A1, A2, A1+A2]
TEST
[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]
NO AUDIO GRP 1
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
NO AUDIO GRP 2
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
NO AUDIO GRP 3
ALARM LEVEL
[GREEN, YELLOW, RED, FLASH RED]
ALARM REPORT
[NONE, GPI]
NO AUDIO GRP 4
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
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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