FEATURES

Video

- Transports signals compatible with SMPTE 292M/ 297M/259M/305M/310M and DVB/ASI standards optically or electrically
- Auto HD-SDI, and SD-SDI reclocking/bypass
- On board HD pattern generator
- Error free pathological pattern operation
- 1x 75Ω BNC connector for HD/SD electrical input
- 2x 75Ω BNC electrical outputs
- 2 or 4 "ST" or 2 or 4ch bulkhead single mode ex-panded beam connectors for optical inputs and outputs

Audio

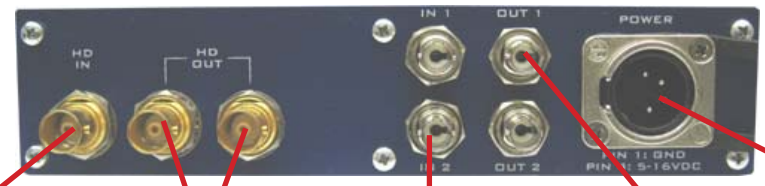
- Embeds/de-embeds 4 AES audio streams into/from HD video electrical and optical input signals (SMPTE 292M/297M)
- Cascade operation for additional AES groups
- DARS input for audio synchronization
- 4x 75Ω BNC and one DB-25 connectors for AES audio inputs/outputs
- Headphone for audio monitoring

Other

- Product control via local user interface or over Ethernet port
- RoHS-6 compliant

VMAES Series

FRONT



Video Electrical Input (BNC)

Video Electrical Outputs (BNC)

Optical Outputs (x2) (HMA or "ST")

Optical Inputs (x2) (HMA or "ST")

Power Supply (Male 4-pin XLR)

REAR

Ethernet Port

Headphone Jack

Digital Audio Reference Signal Input (BNC)

AES Audio/Data Inputs/ Outputs (BNC or DB-25)

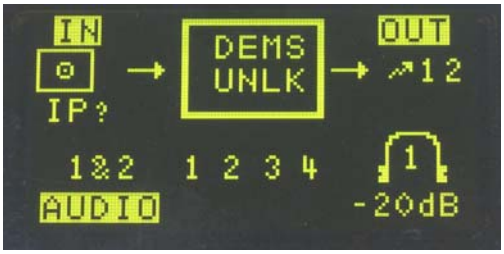
LOCAL USER INTERFACE CONTROLS

A) INPUT SIGNAL SOURCES:

ELECTRICAL INPUT:

1) Upon power up, the top level screen will display previous user selected settings. For illustration purposes, we are showing screens from a unit set to the electrical input.

With Signal Applied



Without Signal Applied

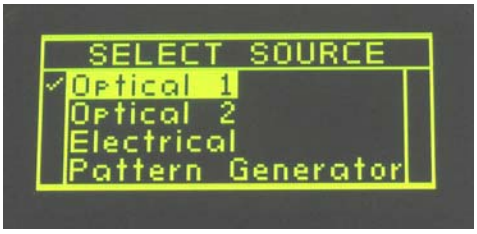
Input Source		Input Status		Input Signal Rate	
Display	**Type**	**Display**	**Status**	**Display**	**Description**
⊙1	Electrical	DET	A modulated electrical input signal is detected	HD	SMPTE 292M video Signal is inputted
				SD	SMPTE 259M video signal is inputted
				UNLK	Video signal other than SMPTE 292M/259M is inputted
		IP?	A signal on the electrical input is NOT detected	UNLK	Electrical Input signal is not present

Table 1a: Input Selection Display For Electrical Input

OPTICAL INPUTS (Currently, the input selected is electrical)

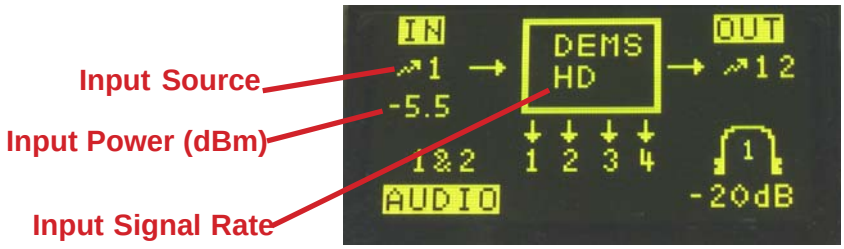
1) To change to an optical input source, use the directional keys (↑ ↓ ← →) on the control panel and move the flashing square cursor to the Input icon ("IN") section and press "Enter"
2) The "INPUT" information Screen will display the input signal type currently selected and its status as shown below. Press "ENTER" to select different input source.

3) Using the directional keys (↑ ↓) on the control panel, move the cursor to the desired optical input channel and Press "ENTER". A check mark ("✓") on the left side of the input source will be displayed to confirm the selection.

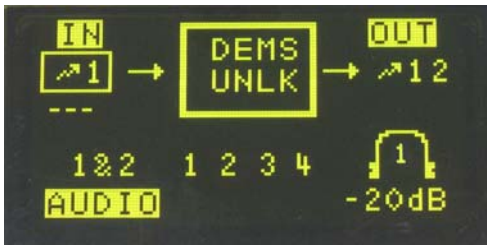


LOCAL USER INTERFACE CONTROLS (continued)

4) On the control panel, press "EXIT" twice to return to the top level screen. The top level screen display will be as follows.



With Signal Applied



Without Signal Applied

Input Source		Input Status		Input Signal Rate	
Display	**Type**	**Display**	**Status**	**Display**	**Description**
1	Optical (Channel #1)	-5.5	Optical power is detected and its input power in dBm is shown.	HD	SMPTE 292M video Signal is inputted
				SD	SMPTE 259M video signal is inputted
				UNLK	Video signal other than SMPTE 292M/259M is inputted
		---	Optical input power is below -40dBm	UNLK	Optical Input signal is not present or optical input power is below -40dBm

Table 1b: Input Selection Display For Optical Input

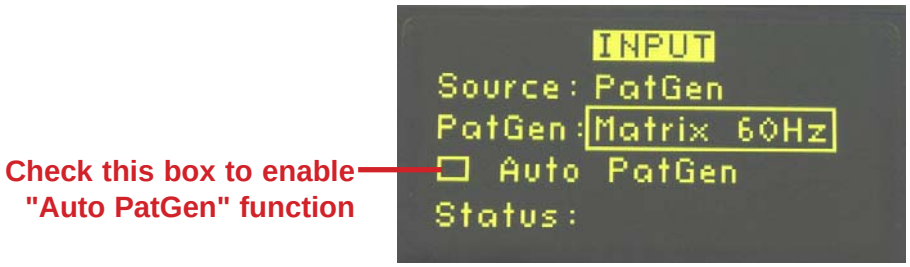
ON-BOARD PATTERN GENERATOR

The input source menu offers an on board pattern generator with color bar test signals with 50Hz, 59.9Hz and 60Hz options. *There is also a "Auto PatGen" option in the input selection menu. When the "Auto PatGen" option is selected, the on board pattern generator will automatically engage when the electrical or optical input signal is lost.* The input signal rate display will change to "PATGEN" when this occurs.

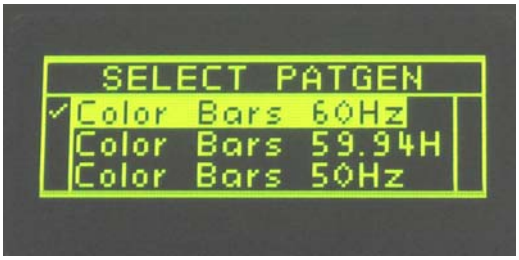
1) Using the directional keys (↑ ↓ ← →) on the control panel, move the flashing square cursor to the Input icon ("IN") section and press "Enter"
2) The "INPUT" information Screen will display the input signal type currently selected and its status. Press "ENTER" again to select different input source.

LOCAL USER INTERFACE CONTROLS (continued)

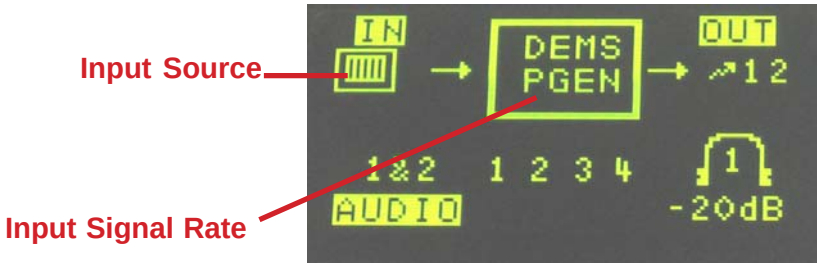
3) Press "EXIT" and then scroll down to the "PatGen" control (as shown below) and press "ENTER"..



4) Using the directional keys (↑↓) on the control panel, move the cursor to the desired pattern and Press "ENTER". A check mark ("✓") on the left side of the input source will be displayed to confirm the selection.



5) On the control panel, press "EXIT" twice to return to the top level screen. The top level screen display will be as follows.



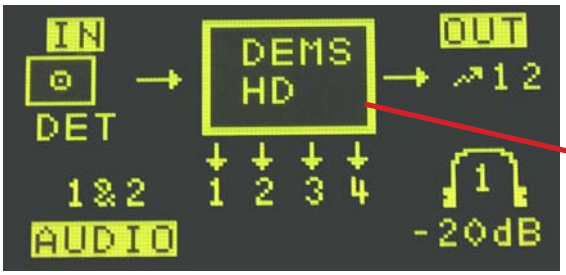
Input Source		Input Signal Rate	
Display	**Type**	**Display**	**Description**
	Color Bars	PATGEN	On board pattern generator is selected as an input source.

Table 1c: Input Selection Display For On Board Pattern Generator Input

LOCAL USER INTERFACE CONTROLS (continued)

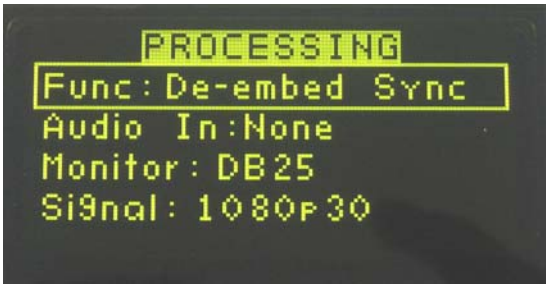
B) PROCESSING FUNCTIONS

1) Using the directional keys (↑↓←→) on the control panel, move the flashing square cursor to the processing mode selection section and press "Enter"



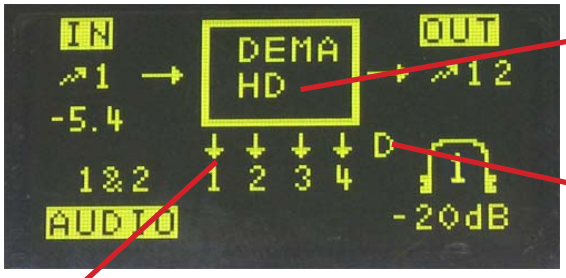
Processing Mode Type (see table 2)

2) The "PROCESSING" information screen will display processing function currently selected and the video input signal type. Press "ENTER" to select different processing function.



3) Using the directional keys on the control panel, move the cursor to the desired processing mode and press "ENTER". A check mark ("✓") on the left side of the input source will be displayed to confirm the selection.

3) On the control panel press "EXIT" twice to return to the top level screen.



Video Input Signal Data Rate

HD	SMPTE 292M video Signal is inputted
SD	SMPTE 259M video signal is inputted
UNLK	Video signal other than SMPTE 292M/259M is inputted

DARS Status

A DARS input is required in De-Embed Asynchronous mode.

D	16-96KHz referenced audio signal is applied to the DARS input
D?	No DARS input signal detected
Blank	DARS input is not required

Audio Signal Indication

(Indicates that AES is being outputted at the BNC connectors. Arrows are reversed in embed mode)

LOCAL USER INTERFACE CONTROLS (continued)

Depending on the user selected processing mode, the display on the top level screen will be as follows:

Display	Mode	Description
BYP	Bypass	FPGA monitors signals but audio embedding is bypassed. AES audio present at the BNC inputs can still be monitored but will not be embedded. Non-video signals can be O/E or E/O converted in this mode. This mode takes priority over a PatGen input.
EMBA	Embed Asynchronous	AES audio with rate other than 48KHz is inputted. The VMAES internal Sample Rate Converter (SRC) circuitry will convert the audio rate to 48Khz and embedded into HD stream.
EMBS	Embed Synchronous	AES audio or data with rate of 48KHz is inputted and embedded into HD stream. The SRC is bypassed and the data is preserved.
DEMS	De-Embed Synchronous	Video + AES audio or data is outputted at 48KHz sample rate. The SRC is bypassed and data is preserved
DEMA	De-Embed Asynchronous	Video + AES audio (no data) with data rate other than 48KHz is inputted. The VMAES internal SRC circuitry will convert the audio rate to match the rate of the DARS input from user (16 to 96KHz) and then outputs the audio at that rate.

Table 2: Processing Mode Selection Display

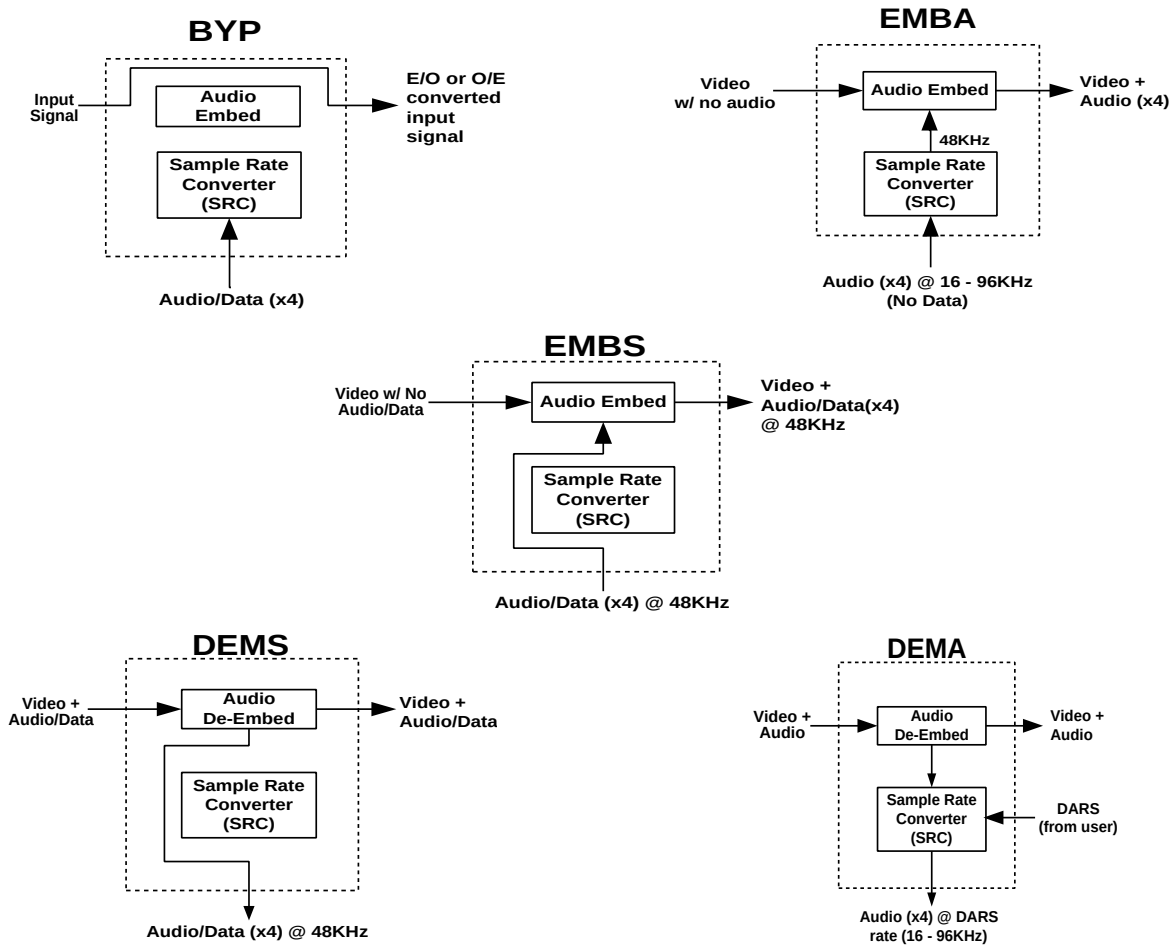


Figure 1: Block Diagrams of VMAES in BYP, EMBA, EMBS, DEMS, and DEMA Modes

LOCAL USER INTERFACE CONTROLS (continued)

C) OUTPUTS

Electrical Outputs:

The electrical outputs are identical and they reflect the output of the processing block except in bypass mode where they track the slected input.

Optical Outputs:

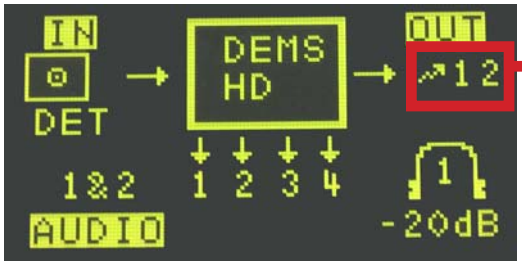
These outputs are optical copies of the electrical outpus and they have special icons to indicate their states as shown in table 3.

Display	Description
1	Optical output channel #1 is enabled and optical output channel #2 is disabled
2	Optical output channel #2 is enabled and optical output channel #1 is disabled
1 2	Optical output channels #1 & #2 are enabled

Table 3: Optical Output Selection Display

The optical outputs can be turned ON/OFF by following the steps below:

1) Using the directional keys (↑ ↓ ← →) on the control panel, move the flashing square cursor to the optical output selection section and press "Enter"



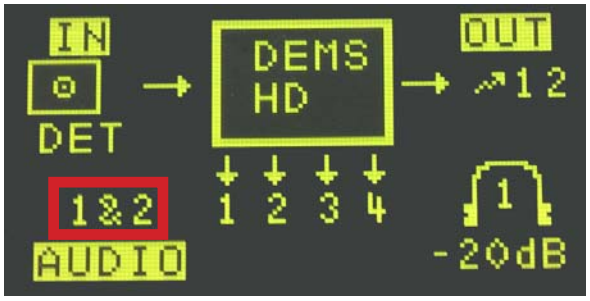
2) The "OUTPUT" information Screen will display current optical output setting, its laser type and the optical output power.

3) To enable or disable "LASER1" output, press "ENTER" and toggle the directional keys to desired setting (enable/disable) and press "ENTER".
4) On the control panel, press "EXIT"
5) To enable or disable "LASER2" output, move the cursor to LASER 2 setting and press "ENTER". Toggle the directional keys again to desired setting (enable/disable) and press "ENTER".
6) On the control panel, press "EXIT" twice to return to the top level screen.

LOCAL USER INTERFACE CONTROLS (continued)

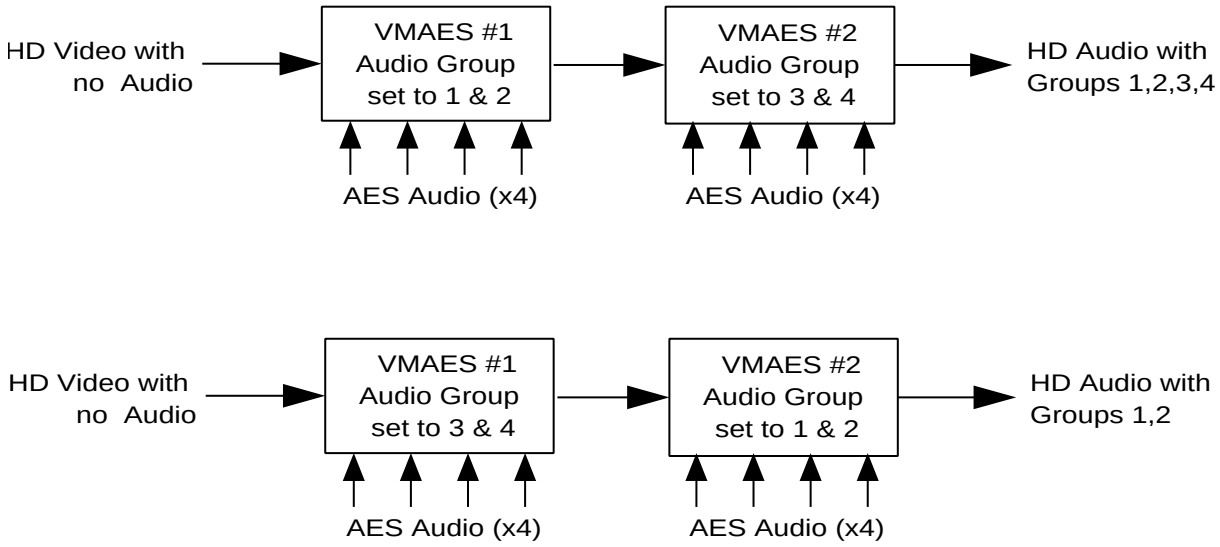
D) AUDIO GROUPS

1) Using the directional keys (↑ ↓ ← →) on the control panel, move the flashing square cursor to the audio group setting section and press "Enter"



2) Using the directional keys (↑ ↓ ← → or ENTER) on the control panel to toggle between audio group 1 & 2 or 3 & 4 and press "Enter".

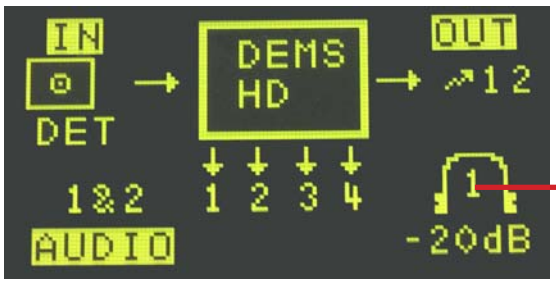
Note:
In embedder (ASYNC or SYNC) mode, audio groups 1 & 2 must be embedded before audio groups 3 & 4 as shown in figure below. Otherwise, audio group 3 & 4 will be lost when cascading.



LOCAL USER INTERFACE CONTROLS (continued)

E) MONITOR AUDIO INPUT/OUTPUT CHANNEL

1) Using the directional keys (↑↓←→) on the control panel, toggle the flashing square to the headphone channel control icon and press "Enter" to select it. The channel will be highlighted to confirm selection.



3) Using the directional keys (↑↓) on the control panel, scroll to the desired audio channel to monitor. Press "EXIT" to deselect. Audio Channels that do not show activity in the display will be muted.

Note:
Channels carrying data may be unintetionally monitored for a short time before being muted by the headphone DAC. Volume levels may be high. Therefore, take care when using the system to carry combined audio and data.

Depending on the user selected headphone setting, the display inside the headphone symbol on the top level screen will be as follows:

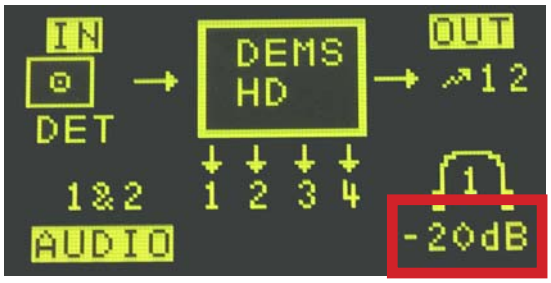
Display	Description
M	Audio output is MUTED
1	AES Channel #1 is selected for listening
2	AES Channel #2 is selected for listening
3	AES Channel #3 is selected for listening
4	AES Channel #4 is selected for listening

Table 4: Headphone Channel Setting Display

4) On the control panel, press "EXIT" to return to deselect the headphone channel control.

F) HEADPHONE VOLUME LEVEL

1) Using the directional keys (↑↓←→) on the control panel, move the flashing square cursor to the headphone volume setting and press "Enter"



2) Using the directional keys (↑↓) on the control panel, adjust the headphone volume to desired setting. Press "EXIT". to deselect the volume control.

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