

Lumagen Dealer Training for Second Generation Products

1 WHO NEEDS AN EXTERNAL SCALER?

Lumagen believes that the simple answer to this question is everyone who wants the best picture quality for their home theater. Anyone who buys their audio equipment based on actual listening tests is a good candidate for a Lumagen video processor. Someone who spent \$399 for an all-in-one home theater is not.

HDTV manufacturers have improved their internal processing, but still fall short of optimal performance. The Lumagen video processor's multitude of features helps fill the gaps in internal, and many other external, video processor's performance and calibration features.

Lumagen video processors provide improved picture quality using advance deinterlacing and scaling algorithms, and by providing extensive "video equalization" features. Some improvements these provide are discussed below. For addition supporting documents see the Lumagen websit at <http://www.lumagen.com>.

2 WHAT IMPROVEMENTS CAN LUMAGEN PRODUCTS PROVIDE?

Here is a list of some differences that can be seen using a Lumagen Video Processor: Note that the size of the difference will vary between different displays.

- Resolution:** Images look more "3-dimensional" due to refined image edges and excellent high-frequency response. For an example of this, look at the three-dimensionality of the opening scene of LOTR Two Towers.
- Chroma resolution:** Provides excellent Chroma bandwidth for all video sources, enhancing saturated color detail.
- Aliasing:** Reduction in aliasing also improves apparent resolution, and improves edge detail.
- Moiré:** Reduces false contouring and false colors seen on high-frequency details .
- Artifacts:** Other scalers often "enhance" compression artifacts, making them more visible. Lumagen scaling algorithms are designed to reduce the visibility of compression artifacts.
- Ringing:** Lumagen scaling algorithms don't suffer from edge "ringing" like so many other scalers.
- Black linearity:** Excellent low-level linearity helps improve dark shadow details.
- White linearity:** Excellent white-level linearity helps improve bright details.
- Y/C-delay:** This error in the timing of Chroma verses Luma is a common problem on TV/cable/satellite receivers, and VCR/Laser-disc/DVD players. It can cause color fringing and/or reduce perceived resolution. Lumagen products can correct this in ¼ pixel steps.
- CUE:** Chroma-Upsample-Error. This artifact is a common problem in digital TV/cable/satellite receiver and DVD players. The Lumagen CUE/ICP filter helps eliminate this artifact.
- ICP:** Interlaced-Chroma-Problem. This artifact is common to all interlaced sources. The Lumagen CUE/ICP filter helps eliminate this artifact.
- Line twitter:** This interlaced display artifact is common in 1080i RPTVs. The Vision/VisionPro vertical filtering can significantly improve this artifact.
- Gray-scale:** The five point gray-scale calibration allows gray-scale color-temperature verses IRE curve peaks and valleys to be virtually eliminated. Requires appropriate calibration equipment.
- Gamma:** The five point gray-scale calibration can also be used to correct the gamma curve. This is especially important with fixed pixel devices. Requires appropriate calibration equipment.
- Input memories:** Each input has two independent configuration memories. These can be used in many ways, such as for accurate independent calibration for day and night viewing, etc.
- Input sizing:** This feature allows the elimination of closed-caption noise and black borders, while preserving the maximum active image. In addition, this feature allows for custom user modes such as CNN without the ticker at 16:9 while.
- Optimal Resolution:** Output resolution in scanline increments allows an optimum resolution specific to each display. Also, if desired, each input can have two independent output resolutions.
- Output Sizing:** Many RPTVs, and other displays, have excessive overscan, which throws away picture information and reduces viewable resolution. Output sizing allows overscan to be optimized.

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3 HINTS FOR ACHIEVING OPTIMAL IMAGE QUALITY

Proper calibration is as important for attaining the best picture as are deinterlacing and scaling.

Make sure to reset to factory defaults if settings have been changed and saved from a previous setup.

If possible, use a power conditioner for the video source, video processor and the display. Power line noise is at least as important an issue for video as it is for audio.

For fixed-pixel devices, use RGBHV from the Lumagen to drive BNC inputs, when available, to minimize noise.

For RGB, "Luma noise" is distributed across the red, green and blue channels but for component, Luma noise is all on the Y (Luma) channel. So, RGB sources can show lower noise levels since the weighting of the three channels for "Luma" as perceived by the viewer tends to filter out some of the Luma noise.

When using a digital video signal to drive a digital video display, the Lumagen output resolution should be set to match the actual resolution of the display device. However, contrary to popular opinion, most fixed-pixel displays that are driven with an analog video signal look best running their input at a resolution higher than their native resolution. This is because the process of "down-sampling" the input to the display's native resolution can filter out some noise and provide more detail. Note: Rules for display of Video are completely different than for the display of PC data. For display of PC generated data, such as spreadsheets, the PC resolution should always be set to match the native resolution of the display.

Avoid running video signals through the video switch inside receivers, as these tend to degrade video quality. The rule of thumb for a video switch is to have 10 times the bandwidth of the video being switched. This equates to about 50 MHz for SDTV and 300 MHz for HDTV switching.

Component inputs on some RPTVs and projectors do not work with the HD standard trilevel sync and/or standard width HSync pulses. When using component video to drive the display, if there is a "green cast" the likely cause is a design problem in the DC restoration circuitry inside the display. Changing to bilevel sync, and/or making the HSync pulse narrower with the Lumagen *HSync Width* command has corrected this in known cases.

Video cabling quality can make a huge difference in the overall video quality.

A system's "ground loop noise" can cause problems. This shows as a screen-width horizontal-band of intensity variation. Since the Lumagen case "floats" it may need to be grounded to the video source and/or display.

The most likely needed tweaks in setup will be for black-level, white-level, color saturation, input and output sizing (to eliminate overscan), and Y/C-delay.

Some demo material that shows various aspects of the improved quality is listed below:

The Ideal Husband: Chroma and background detail. Chapter 4 beginning (look for the quality of the box reflecting in the mirror in center of image when man puts flower in lapel) and chapter 7 beginning (look for color saturation and edge detail between crimson red carriage seat and wood trim).

Lord of the Rings, Two Towers, opening scene: Look for the three-dimensionality of the mountain scene, and then for the shadow detail of the rocks and smoke in the Balrog scene.

Criterion Collection Armageddon (letterbox, non-anamorphic): Shows scaling quality of letter-box source.

Star Trek Insurrection: Pull-down reconstruction. Opening scene panning by the bridge and the settlement. Look for smooth panning of the bridge and of the settlement.

Jurassic Park 3, Chapter 4. When the airplane flies across the screen, look at details on plane for noise.

Monsters Inc: Saturated color. Red car at 7:42 into the movie (chap 5). Walking to work by red car.

Moulon Rouge: Saturated color ICP/CUE. Chapter 4 at 2:08. Man in a red coat rises from a ring of people.

Dinosaurs: Chapter 2, finding the hatching egg shows both photo and animation dark-scene detail

Lost In Space: Black-level, thin elements. Beginning of movie pan away from the space station. Look for "stair-stepping." Also, on a 1080i display, look for "line-twitter."

NOTE: Many HD satellite receivers have taken a giant leap backwards, by not automatically switching to SD interlaced output, or at least 480p/576p, for SD interlaced sources. When possible the source should be set to output the resolution of the source material, so the Lumagen can do the deinterlacing, and scaling. Of course, even when a satellite receive outputs all material at 1080i, the calibration features of the Lumagen are still available.

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4 STEP BY STEP

The Lumagen remote-control setup sequence for typical configurations is shown below. For **MENU** commands, buttons are shown in bold. Press the **MENU** button, use arrow keys to select the next entry and press the **OK** button. An “→” denotes next menu level. See the *Installation Commands* section of the user manual for additional options.

- Connect video cables. Then connect power and turn all required components on.
- Output type: If a DVI-D display is connected, the output mode will be DVI-D, otherwise analog RGBHV output is the default. For analog output, the mode can be changed as shown below:
HD YP_RP_B trilevel: **MENU 01 1 OK** HD component with embedded trilevel sync
SD YP_RP_B bilevel: **MENU 01 5 OK** SD component with embedded bilevel sync

- Vertical refresh rate: The default vertical refresh rate is 59.94, but it can be changed to be from 24 (23.98) up to 120 Hertz, depending on resolution.

MENU 04 value OK Value is in hundredths (e.g. 59.94 is **5 9 9 4**)

- Output resolution: The output resolution defaults to 480p, which has 480 active scanlines. A different output resolution can be selected using the menu or by direct command. The menu command is:

MENU → OUT → RES → VRES → value OK

The direct commands to select output resolution are:

480p: **MENU 0 2 1** 540p: **MENU 0 2 2** 600p: **MENU 0 2 3**
720p: **MENU 0 2 4** 768p: **MENU 0 2 5** 840p: **MENU 0 2 6**
1080p: **MENU 0 2 7** 1080i: **MENU 0 2 8**

Other: **MENU 0 3 value [▼,▲] OK** where ▼ is interlaced and ▲ is progressive (default).

- The default horizontal resolution is automatically selected based on the programmed vertical resolution. Some DVI-D displays use different horizontal resolutions. For these DVI-D displays the horizontal resolution can be specified in pixels as:

MENU → OUT → RES → HRES → value OK

- The exact output timing can be set using the *Timing* menu. This screen can be accessed directly as **MENU 0 9 4 3** or using the menu as: **MENU → OUT → RES → TIMING**

- Set the output aspect ratio to match the screen. 16:9 is the default. Press “**MENU 0 6 value OK**” where “value” is the screen aspect ratio in hundredths (4:3 is **MENU 0 6 1 3 3 OK**)

- Set the output level. If unsure, use the defaults. The commands are:

For analog: **MENU → OUT → LEVL → PDSTL → (0 IRE, 7.5 IRE) OK**

For DVI-D: **MENU → OUT → LEVL → PDSTL → (VIDEO, PC) OK**

- Select the input type for both component/RGB inputs (Select desired input, then press **MENU → IN → TYPE → (SDYPBPR, HDYPBPR, RGBHV, RGBS, RGsB), OK**

- Set the video input levels. If unsure, use defaults. The commands are:

For analog inputs: **MENU → IN → CONFIG → ADJ → PDSTL → (0 IRE, 7.5 IRE) OK**

For DVI-D inputs: **MENU → IN → CONFIG → ADJ → PDSTL → (VIDEO, PC) OK**

- Play a DVD calibration disc and select it as the input source. AVIA™ test patterns are referenced here, but Digital Video Essentials™ is also excellent.

- Select Lumagen input aspect ratio of **16:9** for a 16:9 screen, or **4:3** for a 4:3 screen.

- Select *Advanced AVIA → Video Test Patterns → Special Tests → Overscan*.

- Adjust the input size and position. This selects which pixels are captured for processing. If the corner being adjusted cannot be seen on-screen, use the output size command described below to reduce the output size, then come back to this step. Adjust the top-left of the image first. Then adjust the bottom-right.

Input top-left: **MENU → IN → CONFIG → ADJ → SIZE → TOPL → [◀,▶,▼,▲] OK**

Input bottom-right: **MENU → IN → CONFIG → ADJ → SIZE → BTMR → [◀,▶,▼,▲] OK**

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- Adjust output size and position to have 1% to 2% overscan. If the display has output size and position, use them. Otherwise use these Lumagen commands:
 - Output size: **MENU → OUT → RES → SIZE → [◀, ▶, ▼, ▲] OK**
 - Output position: **MENU → OUT → RES → POS → [◀, ▶, ▼, ▲] OK**
- Select *Advanced AVIA → Video Test Patterns → Gray Scale & Levels → Black and White Levels → Needle Pulses*.
- Set the black level. Follow *AVIA* instructions for setting the black level. Use the display's black level (often called "brightness") for the DVD input, then use the Lumagen controls for differences in other inputs. The command is:
MENU → IN → CONFIG → COLR → BLCK → [▲, ▼] OK
- Set the white level. Follow *AVIA* instructions for setting the white level (often called contrast). Use the display's white level for the DVD input, then use the Lumagen controls for differences in other inputs. The command is:
MENU → IN → CONFIG → COLR → CONT → [▲, ▼] OK
- Select *Advanced AVIA → Video Test Patterns → Color → Standard Colorbars*.
- Set Color and Hue using the Lumagen controls viewing the blue colorbar pattern. Set the display's Color and Hue to default. Follow instructions on the *AVIA* disc for the color bar images. Advanced users can also set red and green offsets for color and hue.
MENU → IN → CONFIG → COLR → COLR → (COLR, HUE) → [◀, ▶, ▼, ▲] OK
- Select *Advanced AVIA → Video Test Patterns → Special Tests → Y/C-Delay*.
- Set Y/C Delay. Use the Lumagen Control to minimize the error in the blue and red timing verses Luma. The C_B and C_R channels can be independently calibrated if desired.
MENU → IN → CONFIG → ADJ → YC-DLY → (CBCR, CB, CR) → [◀, ▶] OK
- The grayscale "color-of-gray" should be calibrated by a video technician. Have the video technician contact Lumagen for the service codes to access the multi-point color of gray and gamma calibration.
- Copy the DVD configuration to all configuration memories (**MENU → IN → COPY → OK**).
- Calibrate other inputs.
- Name the inputs, if desired (**MENU → CONFIG → IN → NAME → OK** and follow directions).
- Set power-on message, if desired (**MENU → MISC → POWR → MSG → [◀, ▶, ▼, ▲] OK**)
- Lock the configuration, if desired (**MENU → MISC → LOCK → LOCKED OK**)
- **SAVE THE CONFIGURATION** (**MENU → SAVE → SAVE OK**)

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5 DIRECT COMMANDS

5.1 OUTPUT TYPE

RGB H-V-:	MENU 0 1 2 OK	RGB with discrete H- and V- sync (factory default)
RGB H+V+:	MENU 0 1 2 ^ OK	RGB with discrete H+ and V+ sync
RGB H+V-:	MENU 0 1 2 > OK	RGB with discrete H+ and V- sync
RGB H-V+:	MENU 0 1 2 ^ < OK	RGB with discrete H- and V+ sync
RGB CSync-:	MENU 0 1 3 OK	RGB with discrete composite negative sync
RGB CSync+:	MENU 0 1 3 ^ OK	RGB with discrete composite positive sync
RGsB trilevel:	MENU 0 1 4 OK	RGB with embedded trilevel sync
RGsB bilevel:	MENU 0 1 4 v OK	RGB with embedded bilevel sync
YP _R P _B trilevel:	MENU 0 1 1 OK	Component with embedded trilevel sync
YP _R P _B bilevel:	MENU 0 1 1 v OK	Component with embedded bilevel sync

5.2 OUTPUT VERTICAL RESOLUTION

480p:	MENU 0 2 1	Progressive with 480 active scanlines
540p:	MENU 0 2 2	Progressive with 540 active scanlines
600p:	MENU 0 2 3	Progressive with 600 active scanlines
720p:	MENU 0 2 4	Progressive with 720 active scanlines
768p:	MENU 0 2 5	Progressive with 768 active scanlines
840p:	MENU 0 2 6	Progressive with 840 active scanlines
1080p:	MENU 0 2 7	Progressive with 1080 active scanlines
1080i:	MENU 0 2 8	Interlaced with 1080 active scanlines
Programmed:	MENU 0 3 value OK	Progressive. Example (960p): MENU 3 9 6 0 OK

5.3 OUTPUT VERTICAL RATE (in hundredths)

Set vertical rate: **MENU 0 4 value OK** Example (59.94 Hz): **MENU 4 5 9 9 4 OK**

5.4 OUTPUT HORIZONTAL RATE (in hundredths) *Not used in normal situations. See Manual*

Output aspect ratio: **MENU 0 5 value OK** Example (45 KHz): **MENU 5 4 5 0 0 0 OK**

5.5 OUTPUT MISCELLANEOUS

Out Size	MENU 0 9 4 1	Output Size
Out Position	MENU 0 9 4 2	Output Position. Left/down limited by H/V sync timing
Out HSync width	MENU 0 9 4 0	Horizontal-Sync width

5.6 OUTPUT ASPECT RATIO

Output aspect ratio: **MENU 0 6 value OK** Example (16:9=1.78): **MENU 6 1 7 8 OK**

5.7 SELECT INPUT

Press input number on remote Menu must be off

5.8 SELECT CONFIGURATION MEMORY

Press **MEMA** or **MEMB** Can be used for day/night modes, etc.
For **MEMC**, press **MENU MEMA** Access MEMC
For **MEMD**, press **MENU MEMB** Access MEMC

SELECT SOURCE ASPECT RATIO

Standard (SDTV):	4:3	Use for standard definition sources in 4:3 format
SDTV letterbox:	LBOX	Use for older DVDs or off-air movies in letter-box format
Enhanced for 16:9:	16:9	Use for 16:9 DVDs and other 16:9 sources
1.85 stretched to 16:9:	1.85	Use only for "stretched" 1.85 source
Zoom in:	^	Menu must be off
Zoom out:	v	Menu must be off

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5.9 SERVICE MODE

Enabling service mode adds some extra entries to the menu for configuration, such as grayscale calibration. Service mode is access by entering:

MENU 0 9 1 0 Toggle SERVICE MODE. (not saved)

5.10 MISCELLANEOUS COMMANDS

Freeze frame	MENU 0 9 0 0	Freeze picture (RS232 code = 'z'). Any button exits
S/W Rev	MENU 0 9 0 3	Display S/W rev, save-count and serial-number
Menu timeout	MENU 0 9 0 5	Toggle menu timeout. Short (default) or long. (saved)
SERVICE MODE	MENU 0 9 1 0	Toggle SERVICE MODE. (not saved)
Unlock	MENU 0 9 1 5	Same as MENU → MISC → LOCK → UNLOCKED, OK
Input Reselect	MENU 0 9 1 9	Only repond to first input selection (i.e. no OSD message if input reselected. Simplifies remote macros). (saved)
Zoom step	MENU 0 9 2 3	Toggle zoom-step between default and 5%. (saved)
LED Mode	MENU 0 9 2 5	Toggle LED/LCD usage as "activity" or "power." (saved)
SW update init	MENU 0 9 3 1	Initialize software update downloading
TV Black	MENU 0 9 3 6	TV decoder black. (saved)
TV Contrast	MENU 0 9 3 7	TV decoder contrast. (saved)
TV MV Black	MENU 0 9 3 8	TV decoder Macrovision black offset. (saved)
TV MV Contrast	MENU 0 9 3 9	TV decoder Macrovision contrast offset. (saved)
HSync width	MENU 0 9 4 0	Jump to HSync pulse width menu command
Output Size	MENU 0 9 4 1	Jump to Output-Size menu command
Output Position	MENU 0 9 4 2	Jump to Output-Position menu command
Deint Enable	MENU 0 9 5 1	Toggle deinterlace enable (not saved)
Deint Split-screen	MENU 0 9 5 2	Toggle deinterlace split-screen (not saved)
Deint Coproc	MENU 0 9 5 3	Toggle deinterlace coprocessor enable (not saved)
Deint noise	MENU 0 9 5 4	Deinterlace noise reduction disable toggle (not saved)
No-input OSD	MENU 0 9 6 4	Toggle enable for input no-signal on-screen message (saved)
SDI cable-EQ	MENU 0 9 7 4	Toggle SDI cable equalization (Default = < 10 meter cable)
Genlock	MENU 0 9 8 1	Toggle genlock. Default = off. (saved)
Genlock status	MENU 0 9 8 2	Genlock status (off, locked, unlocked)
Sidebar pan	MENU 0 9 8 7	Toggle Sidebar-pan for antiburn. Default = off. (saved)
Output defaults	MENU 0 9 9 8	Reset current output settings (only) to default for current resolution
Factory defaults	MENU 0 9 9 9	Reset to factory defaults (Must do a save to make this permanent)

5.11 MISCELLANEOUS COMMANDS – Additional information

GRAYSCALE CALIBRATION (Enter service mode then MENU → IN → COLR → CTMP →):

NOTE: Grayscale calibration requires a colorimeter and appropriate training.

Service mode adds an extra menu entry for IN->COLR->CTMP for each input memory. This allows the grayscale color-temperature to be calibrated at input levels of 100, 80, 50, 30, and 20 IRE, with either external or internally generated Window patterns, independently for each input. NOTE: It is always best to use Window Patterns from the source device, rather than the Vision's internal patterns, since this calibrates the entire video path including the source's output circuitry and the Vision's TV decoder.

This feature is intended for fine-tuning the grayscale after the projector, or HDTV, grayscale color temperature has been calibrated. We recommend that the display be calibrated at 100 and 30 IRE using its internal grayscale calibration controls, before using this feature. This calibration feature operates like the grayscale calibration in projectors, except there are five points of calibration (100, 80, 50, 30, 20), rather than the typical two points. If the projector's or HDTV's service codes are not known, this feature allows the system grayscale to still be calibrated.

Keep the "LUMA" value at the respective level (i.e. 100, 80, 50, 30, and 20) for a standard (linear) response through the Vision. For example, if Green were increased by two clicks to correct color-temperature, select the LUMA entry

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and down click it once to put the LUMA value back to the correct level. As another example, if 100 IRE must be corrected, the "LUMA" level out can no longer reach 100 IRE since it is a weighted average of red, green and blue. If the calibrated "100 IRE" point has a "LUMA" value of 2% less than 100 (98), then reduce the LUMA of each of the lower four points (80, 50, 30, and 20) by 2% to keep a linear response through the Vision (in this case resulting in 98, 78, 49, 29, and 20 as the "LUMA" settings in the menu).

You can also use the "LUMA" value to change the gamma curve of the Vision. We recommend the LUMA response curve be left as linear, unless a trained technician with the proper equipment is available to calibrate gamma. Improper gamma settings can easily degrade picture quality.

OUTPUT VOLTAGE CALIBRATION (Enter service mode then MENU → OUT → LEVL →):

Service mode adds an extra entry for OUT->LEVL to set both the output black pedestal voltage and the output white voltage. We strongly recommend you NOT change these, since these values are considered factory settings and have a special "BURN" process to make any changes permanent. There is a "BURN" entry in the service MENU near the LEVL entry. Select this BURN entry and press ENTER to update the FLASH ROM with the new levels for pedestal and white voltages. The BURN step **cannot** be undone, but new values can be BURNed multiple times if needed.

MENU TIMEOUT (0905):

If menus timeout sooner than desired, set this to slow to increase the menu timeout delay by about 10 times.

MENU UNLOCK (0915):

If there is no picture visible while the configuration is locked (e.g. display was changed), this command will unlock the configuration without having to see and use the menu. This command has the same effect as the menu's unlock command (MENU → MISC → LOCK → UNLOCKED, **OK**).

TV DECODER (0936 – 0939):

Codes 0936 to 0939 are intended to fix an anomaly in many DVD players that occurs when Macrovision™ copy protection is enabled. Most DVD players change their output levels when a Macrovision encoded source is detected. Macrovision specifies a small change, but DVDs do not follow the Macrovision specification and vary in how much the levels change between nonMacrovision and Macrovision encoded material. This is exacerbated by the fact that the percentage change on the sync pulses differ from the percentage change in the video levels. Since many TV decoders (including ours) use the sync tip to blank level to set gain, this inconsistency could cause problems.

Unfortunately, test patterns on both the defacto standard calibration discs (AVIA and Video Essentials) have Macrovision disabled. This means that these calibration standards do not calibrate the video path correctly for the overwhelming majority of discs, which have Macrovision.

Since these levels are different both non-Macrovision and Macrovision settings are provided. First calibrate using AVIA or Video Essentials. We strongly recommend that the default TV decoder contrast (0937) and black (0936) values be used. Note that our TV decoder's contrast is non-standard in that it controls gain from the mid-IRE point (rather than white), and so also affects the black level. For contrast, smaller values reduce gain as expected.

The default Macrovision settings should work well. However, after calibration with AVIA or Digital Video Essentials has been completed, check the TV decoder Macrovision settings with a movie disc that has Macrovision to set the Macrovision white and black levels. We suggest using the THX calibration available on some discs such as Star Wars Attack of the Clones™. If the default values do not provide the correct Macrovision settings, adjust the TV decoder's Macrovision Contrast (0939) and Macrovision Black (0938) using the White-crush test, and other tests, to eliminate any white-crush, and to set the correct Macrovision black level.

GENLOCK (0981, 0982):

NOTE: The Vision and VisionPro were not originally designed to Genlock, and some compromises in the SMPTE timings are made when it is enabled. Unfortunately, not all displays are designed to be tolerant of these small variations, and so genlock does not work with all displays. **LUMAGEN EXPLICITLY DISCLAIMS ALL WARRANTIES IN REGARD TO GENLOCK COMPATABILITY WITH ANY OTHER DEVICE.**

Genlock attempts to lock the input and output frame rates exactly to avoid occasional dropped frames. An additional advantage of genlock is that it minimizes lip-sync delay and keeps the lip-sync delay constant. Genlock will only

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function if the output rate matches the input rate (59.94 for NTSC and 50.00 for most PAL standards). Also, if the horizontal rate is manually altered, genlock may be disabled.

SIDEBAR PAN (0987):

When sidebars are present on the display (i.e. displaying a 4:3 input aspect ratio on a 16:9 screen) the potential for burn-in exists on many displays. If Sidebar-pan is enabled the active 4:3 image pans left and right a small distance, in fractional pixel steps once every several minutes, in order to minimize burn-in.

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6 MENU TREE

MENU →

IN →

TYPE →

DVI	Digital-Video-Interface
SDYPBPR	Component using the SDTV color-space
HDYPBPR	Component using the HDTV color-space
RGBHV	RGB with separate Horizontal and vertical sync
RGBS	RGB with separate composite sync
RGsB	RGB with composite sync on green
VID	Composite interlaced standard definition
SVID	SVideo interlaced standard definition
SDI	Serial Digital Interface

OUTSEL

If output in INDEP mode, select one of 8 output configurations

CONFIG →

COLR →

BLCK	Use display black for selected input
CONT	Use display contrast for selected input

COLR →

COLR	Color saturation (Use “blue” color bar pattern)
HUE	Hue (Use “blue” color bar pattern)
COLRED	Red Color saturation offset (Use “red” color bar pattern)
HUERED	Red Color Hue offset (Use “red” color bar pattern)
COLGRN	Green Color saturation offset (Use “green” color bar pattern)
HUEGRN	Green Hue offset (Use “green” color bar pattern)
CTMP	Grayscale and gamma calibration (Service mode only)

ADJ →

SIZE →

TOPL	Position top-left of input
BTMR	Scale to position bottom-left corner of input
4:3	Select 4:3 input as normal or non-linear-stretch
YCDLY	Y/C delay independently for CR and CB
SHARP	Composite and SVideo inputs only.
LEVEL	Black pedestal or DVI-D levels
ENHNCE	BLACK (expand 0 to 2 IRE), or OFF

NAME

Name input memory. Follow on-screen instructions

DVI

For DVI inputs, select modes

HDCP

Select if DVI input reports HDCP capability

EDID

Does EDID use Lumagen values or monitors values?

HOTPLUG

Does “hotplug” remain asserted when input not selected?

COPY →

ALL

Copy current input memory to all input memories

ALLMEMA

Copy current input memory to all MEMA input memories

ALLMEMB

Copy current input memory to all MEMB input memories

ALLMEMC

Copy current input memory to all MEMC input memories

ALLMEMD

Copy current input memory to all MEMD input memories

1A, etc.

Copy current input memory to selected input memory

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MENU →

OUT →

RES →

VRATE	Vertical refresh rate
VRES	Vertical resolution
HRATE	Analog input: Horizontal rate (Normally not used)
HRES	Digital input: Horizontal rate (Normally not used)
SIZE	Set output size
POS	Output position
ASPECT	Output aspect ratio (1.33 to 2.35 in hundredths)

GBAR →

SIDE	Side gray-bar intensity (0 to 49 ire)
LBOX	Top/bottom letter-box-bar intensity (Service mode only)

LEVL →

PDSTL	Analog output black pedestal (0 IRE or 7.5 IRE)
DVILVL	DVI-D output level (VIDEO or PC)
MODE →	Single (default) or multiple-output-timing mode
SAME	Single output mode. All memories share output timing, type, etc.
INDEP	Eight independent output modes.
AUTOIND	Automatically select memory based on NTSC or PAL input.
COPY →	This command is only active if output mode is INDEP
ALL	Copy current output memory to all other output memories
0-7	Copy current output memory to selected output memory

MENU →

MISC →

LCD →

BKLGHT	LCD backlight enable (VisionPro HDP only)
CNTRST	LCD contrast (VisionPro HDP only)
OSD	Toggle OSD-enable. Shows status when input selected if enabled
LOCK	Lock or unlock the configuration.
POWR →	Unit can go to either “ON” or “STBY” when power is applied
AUTO	Change power-on message. Follow the on-screen instructions
MSG	
TPAT	Test patterns.

MENU →

SAVE →

SAVE	Note: Unsaved changes can be discarded by going to STBY Save current configuration to flash ROM.
UNDO	Toggle between current saved and previous saved configurations
FCTRY	Reset to factory defaults