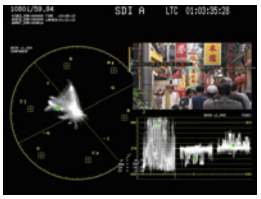
MULTI SDI RASTERIZER

LV 7330

LEADER

■ CINELITE Advanced Display



NEW

Synchronizes the markers on the vector display or waveform display to the measurement points of the CINELITE display's f Stop display or % display

(Future)

External Display

HD-SDI

SD-SDI

1U size (half Rack)

CINELITE II INSIDE

CE

Upon request

Multi SDI Rasterizer

The LV 7330 is a highly functional, compact, light-weight SDI rasterizer that boasts exceptional cost performance.
When the LV 7330 is connected to an external XGA or WXGA monitor, it can display the picture of an HD-SDI or SD-SDI signal in addition to video signal waveforms, vectors, audio data, and data analyses of the signal. The LV 7330 also comes standard-equipped with CINELITE II, a convenient tool for analyzing luminance data.

FEATURES

- **SDI Inputs and Outputs**
  The LV 7330 has two SDI input connectors that can be used for both HD-SDI and SD-SDI input. It also has an SDI output connector that you can use to send a reclocked SDI signal.
- **DVI Output**
  The various LV 7330 displays are transferred through a DVI-I connector to an XGA (1024 x 768) display. The LV 7330 also uses a squeeze method to support aspect ratios of 16:9 (1366 x 768) and 16:10 (1920 x 1200).
- **CINELITE II / CINELITE Advanced**
  The LV 7330 comes standard-equipped with CINELITE II (CINELITE and CINEZONE), which is a video signal luminance information analysis tool.
  With CINELITE, you can use the cursor to select any 3 points and display their f-Stop numbers, percentage values, and level values. You can choose to analyze a single pixel or a small area by setting the size of the measured area to 1 pixel or to the average value for 9 or 81 pixels.
  With CINEZONE, you can display the luminance levels in the picture using different colors. This allows you to quickly determine the overall luminance distribution in the picture, and it makes it easy to spot overexposure, underexposure, and different luminance levels in dark areas.
- **Picture Display**
  The LV 7330 has a wide assortment of SDI signal picture display features including zoom, various safety markers, and brightness, contrast, and chroma adjustment. The LV 7330 also supports CEA/EIA-608 closed captioning and superimposition.
- **Video Signal Waveform Display**
  The LV 7330 uses fully digital waveform display processing to achieve high precision and quality. From video signal waveform display gain expansion, sweep expansion, and cursor measurement to pseudo-composite and RGB displays, the LV 7330 has all of the features that people look for in a waveform monitor. The LV 7330 is equipped with an external sync signal input and it can display video signal waveforms based on a tri-level sync signal or an NTSC or PAL black burst signal.
- **Vector Display**
  The LV 7330 can display component chrominance signal vectors.
  The amplitude can be manually zoomed, or set to a fixed magnification value such as five. The IQ axes, which are useful for vector observation, can be turned on and off.
- **5 Bar Display**
  The LV 7330 can display the peak levels of the Y, R, G, B and pseudo-composite signals.
  This feature is useful for monitoring gamut errors.
- **Audio Display**
  The LV 7330 can extract the audio signal embedded in an SDI signal and display level meters, Lissajous curves, and surround-sound images for up to eight channels. The LV 7330 also supports external digital audio input, for which it can display a two-channel level meter and Lissajous curves. The level meter supports loudness metering and is useful for managing the volume level experienced by the listener.
  *The resolution of SD-SDI audio quantization is up to 20 bits.
- **Stereo Headphone Output**
  The LV 7330 can extract the audio signal embedded in an SDI signal. You can select two channels from the extracted audio and transmit them in stereo through the headphone output connector.
- **Status Display**
  The status display has a number of advanced features, including SDI signal error detection and analysis features.
- **Time Code Display**
  The LV 7330 can decode SMPTE 12M-2 time codes (LTC or VITC) and SMPTE 266M time codes (D-VITC) and display them. These codes can be used as timestamps in the event log.
- **Screen Capture**
  The display can be captured. Captured displays can be viewed or superimposed over an input signal. Captured displays can be saved in internal memory (RAM) or USB memory or sent to a PC through an Ethernet connection as bitmap data.
- **Presets Settings**
  The LV 7330 can store up to 30 frequently used setting configurations. The configurations can be recalled easily from the front panel or using commands sent through the Ethernet or remote connector.
- **Remote Connector**
  You can recall presets by sending commands through the remote connector. Also, a tally light can be displayed on the screen.
- **Ethernet Connector**
  From a PC connected to the LV 7330 through the Ethernet connector, you can recall presets, execute panel operations, transfer files, and monitor errors.
- **Last Memory**
  The LV 7330 backs up the current settings so that you can use the same settings that you were using before immediately after powering it up.
- **Power Supply**
  The LV 7330 has an XLR DC input connector and runs on a 12-VDC power supply.

LV 7330SER01 HISTOGRAM & USER GAMMA DISPLAY (Option)

This software option enables you to show video signals on the LV 7330 histogram display. It also enables you to convert the user-defined gamma to ITU-R BT709 gamma and show the converted signal on the picture display.

LV 7330SER02 GAMUT & LEVEL ERROR (Option)

This GAMUT & LEVEL ERROR option adds the following features to the LV 7330

- Area and time specification in gamut error detection
- Detection of luminance and chrominance signal level errors

LV 7330 SPECIFICATIONS

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Video Signal Formats and Corresponding Standards

Single Link System Video

Color System	Quantization	Format: Scanning	Format: Frame (Field) Rates	Corresponding Standard
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE ST 274 SMPTE ST 292
		1080p	30/29.97/25/24/23.98	
		1080PsF		SMPTE ST 274 SMPTE ST 292
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE ST 296 SMPTE ST 292
		525i	59.94	SMPTE ST 259
		625i	50	

(only link A is supported for dual link)

Color System	Quantization	Format: Scanning	Format: Frame (Field) Rates	Corresponding Standard
GBR 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE ST 372 (1920×1080)
		1080PsF		
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF		
		1080i	60/59.94/50	
Y,C_B,C_R 4:2:2	10 bit	1080p	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF		
		1080i	60/59.94/50	

Format Setting: Can be set automatically based on the corresponding format or set manually (Set manually for dual link)

Supported Sampling Frequencies: HD:74.25 MHz or 74.25/1.001 MHz, SD:13.5 MHz

External Sync: Automatically set from the corresponding format

Audio Playback

- **Compliant Standard**: HD:SMPTE ST 299, SD:SMPTE ST 272
- **Sampling Frequency**: 48 kHz (must be synchronized to the video signal)
- **Quantization**: HD:24 bits, SD:20 bits
- **Channel Separation**: 2 groups of 8 channels are selectable.

Input/Output Connectors

- **SDI Input**
  - **Input Connector**: 2 BNC connectors (A/B switching)
- **External Reference Input***
  - **Input Signal**: Tri-level sync or NTSC/PAL black burst signal
  - **Input Connector**: 1 pair of BNC connectors loop-through
    * If the video signal waveform or phase difference is displayed using an external sync signal as reference, the waveform phase one clock before or after an SDI signal is inserted or the power is turned on is indefinite.
- **AES/EBU Input**
  - **Input Connector**: 1 BNC connector
  - **Sampling Frequency**: 48 kHz
- **SDI Output**
  - **Output Connector**: 1 BNC connector, Reclocks and transmits the selected SDI input signal
- **DVI-I Output**
  - **Output Connector**: 1 DVI-I connector
  - **Signal Format**: Single Link T.M.D.S analog RGB
  - **Display Format**: XGA (1024 x 768) Supports wide displays (using squeeze methods)
  - **DDC**: Not Supported
  - **HOT PLUG Detection**: Not Supported
- **Headphone Output**: One 6.3-mm (1/4 in.) stereo jack

Control Connectors

- **USB Port**
  - **Function**: Used to save screen captures, event logs, preset data, and data dumps
  - **Media**: Only USB memory devices are supported.
- **Remote Connector**
  - **Function**: Used to recall presets, display a tally light, and switch input channels (A/B)
  - **Control Connector**: 15-pin D-sub (female)
- **Ethernet Port**
  - **Function**: Used to control the LV 7330 from a PC and monitor errors and other events
  - **Input/Output Connectors**: 1 RJ-45 connector
  - **Type**: 10Base-T/100Base-TX (automatic switching)

Screen Capture

- **Function**: Captures the screen
- **Display**: Displays the captured image or superimposes the captured image over the input signal
- **Media**: Internal memory (RAM) and USB memory Only one screen capture can be stored in the internal memory.

Presets Settings: 30

Display Format

- **1 Screen Display**: Picture display, CINELITE display, CINEZONE display, video signal waveform display, vector display, status display, or audio display
- **2 Screen Display**: Picture display and video signal waveform display
  Video signal waveform display and vector display
  Video signal waveform display and picture display
  Video signal waveform display and audio level display
  Audio waveform display and level meter display
- **4 Screen Display**: Select audio level display or status display in addition to video signal waveform display, vectorscope display, and picture display
- **Time code**: LTC, VITC, or D-VITC
- **Format Display**
- **Color System Display**
- **Date Display**

Waveform Display

- **Waveform Operations**
  - **Display Modes**: Overlays, Parade, Timing
  - **Blanking Period**: Show or hide
  - **RGB Conversion**: Converts a Y,C_B,C_R signal into an RGB signal and displays the result.
  - **Pseudo-Composite Display**: Artificially converts component signals into composite signals and displays the result.
- **Vertical Axis**
  - **Gain**: x1 or x5
  - **Variable Gain**: x0.2 to x2.0
- **Horizontal Axis**
  - **Line Display**: x1, x10, x20, ACTIVE, or BLANK
  - **Field Display**: x1, x20, or x40
- **Cursor Measurement**
  - **Amplitude Measurement**: mV, %, R%, 3FF, 1023
  - **Time Measurement**: usec/msec
  - **Frequency Display**: Computes and displays the frequency with the length of one period set to the time between two cursors.
- **Scale**
  - **Type**: %, V, 3FF, 1023
  - **75 % Marker**: Displays where the location of the peak of a 75 % color bar chrominance signal would be.

Vector Display

- **Gain**: x1, x5, or IQ-MAG
- **Variable Gain**: x0.2 to x2.0
- **Blanking Period**: Masked
- **Scale**
  - **Type**: 75 % or 100 % (color bar)
  - **IQ Axis**: Show or hide
- **Pseudo-Composite**: Artificially converts component signals into composite signals and displays the result.

5 Bar Display

- **Function**: Displays five peak levels: those of the Y, R, G, B and composite signals.
- **Error Level**: Based on gamut error level and composite gamut error level settings.

Phase Difference Display

- **Display**: Displays the phase difference between an SDI signal and the external sync signal both numerically and graphically.
- **Display Range**: 0.45 (ITU-R BT709)
- **Vertical**: ±1 field (for interlace)
  ±1/2 frame (for progressive)
- **Horizontal***: ±1 line
  * If the video signal waveform is displayed using an external sync signal as a reference, the waveform phase one clock before or after an SDI signal is inserted or the power is turned on is indefinite.

Picture Display

- **Display Sizes**: FIT, x1, or x2
- **Color Selection**: Color or monochrome
- **Marker Displays**
  - **Center Marker**
  - **Aspect Markers**
    - **HD**: 4:3, 14:9, 13:9, 2.35:1, 1.85:1, and 1.66:1
    - **SD**: 16:9, 14:9, 13:9, 2.35:1, 1.85:1, and 1.66:1
  - **Safe Action Markers**: 95 %, 93 %, and 90 %
  - **Safe Title Markers**: 88 % and 80 %

CINELITE Display

- **Function**: f-Stop display, percentage display, and level display
- **f-Stop Display**: Displays the f value relative to the reference point
  The reference point is set to the value of an object with a reflection level of 18 %.
- **f-Stop Gamma Correction**: 0.45 (ITU-R BT709)
- **Percentage Display**: Displays luminance or RGB components as percentages.
- **Level Display**: Displays luminance or RGB components with 256 levels (8 bits).

CINEZONE Display

- **Function**: Displays the luminance levels in the picture using different colors
- **Display Colors**: Linear (1024 colors) or step (12 colors)
- **Level Search Display**: Displays a specified luminance level ±0.5 % using green on an otherwise monochrome picture display.

CINELITE Advanced Display

- **Features**: Synchronized marker display, vector marker display
- **Synchronized Marker Display**: Synchronizes the markers on the vector display or waveform display to the measurement points of the CINELITE display's f Stop display or % display
- **Vector Marker Display**: Displays numerically the specified position on the vector display

Embedded Audio Display

- **Lissajous Display**: 2 channels or 8 channels (only for embedded audio)
- **Sound Image Display**
  - **Channel Mapping**: L, R, C, LFE, Ls(s), Rs, LL, RR
  - **Surround Formats**: 3-1, 3-2, 3-2-2
- **Level Meter Display**: 8ch / 2ch, 60 dB peak level, 90 dB peak level, average, or loudness
- **Channels (Group Selection)**: You can select any 2 groups from groups 1, 2, 3, and 4.
  * The LV 7330 cannot display Lissajous curves, 8-channel level meters, or sound images for AES/EBU signals that it receives.

Status Display

- **SDI Signal Error Detection**: TRS Error, Line Number Error, CRC Error, EDH Error, Gamut Error, Composite Gamut Error, Parity Error, Checksum Error, BCH Error, Audio CRC Error
- **Audio Information Detection**: Detects the presence of each audio channel
- **Error Count**: Up to 100,000 errors (Only the specified errors are counted.)
  - **Count Period**: Only one error is counted for each second or frame.
- **Event Log Display**
  - **Recording Capacity**: Up to 1,000 events
  - **Recorded Events**: Errors, changes in input type, time stamps, etc.
  - **Data Output**: Event logs can be saved to USB memory or sent to a PC through an Ethernet connection as text data.
- **Data Dump Display**
  - **Display Modes**: Display data separated by serial data sequence or by channel
  - **Data Output**: Event logs can be saved to USB memory or sent to a PC through an Ethernet connection as text data.
- **Audio Status Display**: Control Packets, Channel Status

Ancillary Data Analysis: EDH Display, Closed Caption Display, Inter-Stationary Control, Data Display (NET-Q), Data Broadcast Trigger Signal Display, V-ANC User Data Display, Time Code Display

Front Panel

- **Key LEDs**: You can dimly light all of the keys by pressing the shortcut key.
- **Last Memory**: Backs up the panel settings.

Environmental Conditions

- **Operating Temperature**: 0 to 40 ˚C
- **Operating Humidity**: 85 %RH or less (no condensation)

Power Requirment

- **Voltage**: 10 to 18 VDC, 18 W max.

Dimensions and Weight: 215(W) x 44(H) x 250(D) mm (excluding protruding parts), 1.3 kg
8 1/2(W) x 1 3/4(H) x 9 7/8(D) inch, 2.9 lbs.

Accessories

Instruction manual.....1
AC adapter (SPU40-105) 1
15-pin D-sub connector.....1
15-pin D-sub connector cover 1
Ferrite core.....1

Refer also to the accessory page.

LV 7330 Option

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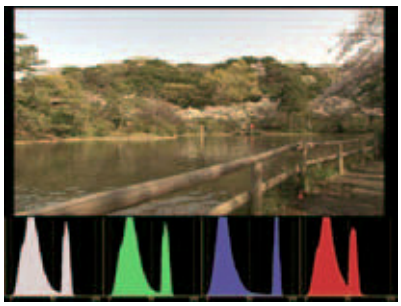
LV 7330SER01 HISTOGRAM & USER GAMMA DISPLAY (Option)

This software option enables you to show video signals on the LV 7330 histogram display. It also enables you to convert the user-defined gamma to ITU-R BT709 gamma and show the converted signal on the picture display.



LV 7330SER01 SPECIFICATIONS

Histogram Display	
Display Modes	YGBR, YRGB, Y1023
YGBR, YRGB	8-bit data processing
Y1023	10-bit data processing
Error Display	Values that are less than 0 % or greater than or equal to100.1 % are displayed as errors.
Error Display Colors	
Y	Red
GBR	Yellow
Histogram Brightness	-128 to 127
Scale Brightness	-8 to 7
Scale Unit	%, 3FF, 1023
Scale Color	White, yellow, cyan, green, magenta, red, blue
Picture Display with User-Defined Gamma	
User-Defined Gamma	Acquired with CAL in the CINELITE display. Selected with GAMMA (USER-A, USER-B, USER-C, USER-D, USER-E).
General Specifications	
Environmental Conditions	Same as the LV 7330
Contents	License key.....1 Instruction manual.....1

LV 7330SER02 GAMUT & LEVEL ERROR(Option)

This GAMUT & LEVEL ERROR option adds the following features to the LV 7330

- Area and time specification in gamut error detection
- Detection of luminance and chrominance signal level errors

LV 7330SER02 SPECIFICATIONS

Gamut Error	
Error Detection	Detect by specifying area and time
Area Specification	0.0 to 5.0 % (specifying 0.0 % is equivalent to not specifying an area)
Time Specification	1 to 50 consecutive frames
Level Error	
Error Detection	Level errors in the luminance and chrominance signals are detected (not available in dual link mode)
Detection Level	
Luminance Signal	-7.2 to 109.4 %, -50.4 to 765.8 mV (for both upper and lower limits)
Chrominance Signal	-57.0 to 57.0 %, -399.0 to 399.0 mV (for both upper and lower limits)
General Specifications	
Environmental Conditions	Same as the LV 7330
Contents	License key.....1 Instruction manual.....1

■ LV 7330 Front Panel

■ LV 7330 Rear Panel

■ Rack Mounting

LR 2481 Rack Mount Adapter (sold separately)