

Leader

LV5300A MULTI WAVEFORM MONITOR



LV5350 MULTI WAVEFORM MONITOR



LV7300 RASTERIZER



General

The LV5300A/LV5350/LV7300 are a space-saving, compact waveform monitor and rasterizer family designed for 4K/UHDTV/HD/SD-SDI video signals. The LV5300A/LV5350 are a waveform monitor with a 7-inch touch screen display in a compact, short-depth 3 RU enclosure optionally operated with battery power supply. The LV7300 is a 1RU half rack sized rasterizer. It is compact but supports eye pattern measurement up to 12G-SDI.

Features

Supports wide range of SDI Video

These monitors and rasterizers support SDI signals from SD formats up to 12G-SDI. Detailed embedded audio analysis is also available.

Unmatched ease of use

The front panel offers familiar, dedicated buttons and knobs for simple operation and training. Additionally, the units can be controlled via a USB mouse. The LV5300A/LV5350 uses a 7-inch full HD panel with a touchscreen, and the LV7300 can be operated and set intuitively by touch operation by connecting an external touch-enabled LCD monitor with a USB cable.

* While most external touch-capable LCD monitors are compatible, not all vendors' products can be guaranteed.

SDI input format

SD-SDI, HD-SDI, 3G-SDI, 6G-SDI, 12G-SDI Single Link is supported.

SDI and IP analysis

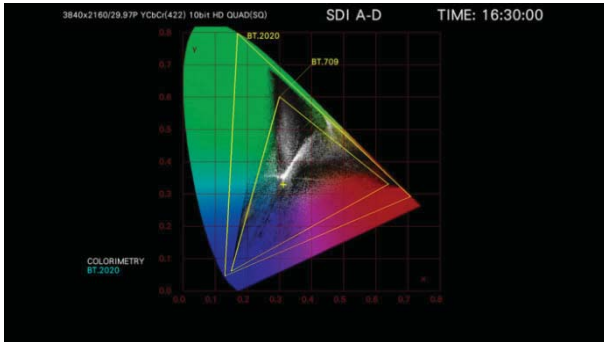
For engineering and troubleshooting needs, the LV5300A/LV5350 and LV7300 offer monitoring of SDI transmission errors, external synchronization phase difference, lip sync, SDI signal frequency deviation, and ancillary data analysis.

DISTRIBUTOR CONTACT:
CALTRON PTE LTD
email: caltron@caltron.sg
www.caltron.sg

Video analysis

The LV5300A/LV5350 and LV7300 provide a full set of video displays including waveform, vector, 5 BAR gamut, and CIE chromaticity diagram. In addition to the various displays, quality of experience (QoE) monitoring such as freeze, black, gamut help ensure all potential issues with content are easily diagnosed.

xy chromaticity coordinate display



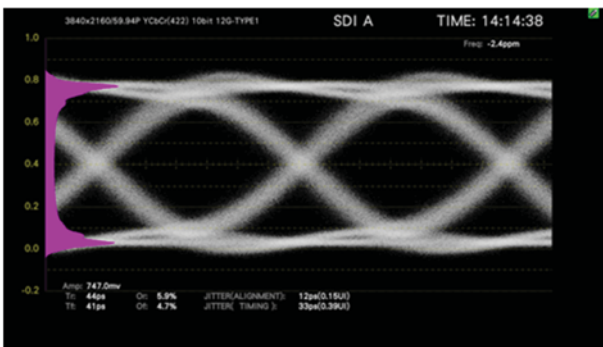
Audio analysis

Embedded SDI audio can be displayed and monitored using level meters, Lissajous display, mute, and clip error detection. Audio format is compatible with L-PCM.

Eye pattern display

From SD-SDI to 12G-SDI Full physical layer measurement of the SDI signal including eye pattern display and jitter allows for detailed engineering evaluations of SDI signal paths.

Eye pattern



Subtitles and closed caption decode

CEA-608, CEA-708 closed captioning, Teletext, Japanese subtitles, and OP47 subtitle embedded in the SDI signal can be verified and displayed in the video.

External synchronization signal input

The phase difference and synchronization status of each SDI video signal is shown graphically based on the external synchronization signal (black burst, tri-level sync).

Fully customizable layout

Various items such as waveforms, vector displays, audio bars, gamut views, and pictures of input signals can be laid out in any position with your preferred size.

SDI signal generation

A built-in generator provides SDI test signals, useful for device or network troubleshooting. The generator supports HD-SDI through 12G-SDI with HD multi format color bar and patterns, multiple overlays of moving boxes and embedded audio, flat field at any level, and a 4K multi format color bar.

*For 4K/UHDTV format only 12G-SDI is possible.

External monitor output

The screen can be output to an external SDI monitor or HDMI monitor with full HD resolution.

*Does not guarantee the operation with all HDMI monitors.

*The LV5300A / LV5350 do not support external monitor output.

Capture data for analysis

Capture the display screen as still image data or use the frame capture function to capture up to 16 frames of data.

Time code display

The time code may be superimposed on SDI video signals. The time code can also be used as the timestamp of the event log.

External remote terminal

The presets can be recalled by remote terminals, and users can switch input signals, tally displays or output alarms.

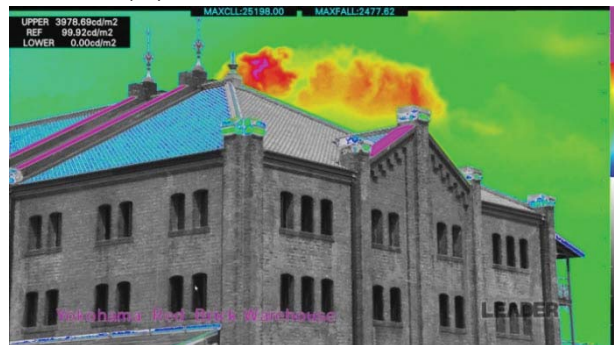
Ethernet connectivity

The LV5600 and LV7600 support remote operation by TELNET, file transfer by FTP, remote operation by SNMP and alarm notification, remote operation and monitoring from a web-browser via HTTP.

HDR capable

HDR signal level monitoring and luminance management accounting for OOTF is straightforward. The waveform display in HDR scale is added to the IRE scale. Furthermore, in the CINEZONE™ display, the luminance distribution of HDR and SDR in the picture can be easily confirmed, with SDR content appearing in monochrome gray scale while HDR is colored according to the brightness.

HDR zone display



Focus assist

We developed a new focus detection algorithm based on proprietary nonlinear super-resolution technology. Focus is determined with high sensitivity and repeatability even under difficult, low-contrast images.

Tally display

Serial communication allows display of camera ID, iris and tally. Fast switching of tally display by remote terminal is also possible.

■ List of hardware options

Model Name	Type Number			Description
	LV5300A	LV5350	LV7300	
SDI INPUT	—	LV5350 standard	LV7300-SER01	SD,HD,3G SDI input *
SDI INPUT/EYE	LV5300A standard	—	LV7300-SER02	SD,HD,3G SDI input and eye pattern display *
BATTERY ADAPTER V MOUNT	LV5300-SER11	LV5350-SER11	—	Battery adapter: V-Mount
BATTERY ADAPTER QR GOLD	LV5300-SER12	LV5350-SER12	—	Battery adapter: QR-Gold

* For LV7300, either LV7300-SER01 and LV7300-SER02 are selected, but one of them is necessary.

■ List of Software options

Model Name	Type Number			Description
	LV5300A	LV5350	LV7300	
AUDIO	LV5300-SER20	LV5350-SER20	LV7300-SER20	Embedded audio analysis
CLOSED CAPTION	LV5300-SER21	LV5350-SER21	LV7300-SER21	Japanese subtitles, EIA-608,708/TELETEXT
CIE	LV5300-SER22	LV5350-SER22	LV7300-SER22	CIE display
HDR	LV5300-SER23	LV5350-SER23	LV7300-SER23	HDR analysis
TSG	LV5300-SER24	LV5350-SER24	LV7300-SER24	SDI signal generation
FOCUS ASSIST	LV5300-SER25	LV5350-SER25	LV7300-SER25	Focus assist
LAYOUT	LV5300-SER26	LV5350-SER26	LV7300-SER26	Customized layout function / Display assignment function
TALLY	LV5300-SER27	LV5350-SER27	LV7300-SER27	Tally displays
4K	LV5300-SER28	LV5350-SER28	LV7300-SER28	4K 6G/12G SDI format support
EXTENDED VEC	LV5300-SER40	LV5350-SER40	LV7300-SER40	Extended vector display function

■ Related accessories

Product Name	Model	Related products			Remarks
		LV5300A	LV5350	LV7300	
RACK-MOUNT ADAPTER	LR2530	○	○		Dual rack mount adapter for the LV5300/LV5350. Two LV5300A / LV5350 can be mounted in an EIA 19-inch rack. (Two options of LV5300A + LV5350 need separately option compatibility.)
BLANK PANEL	LC2535	○	○		Blank panel for the LR2530
RACK-MOUNT ADAPTER	LR2561	○	○		LR2561 is a rack mount adapter that allows two LV5600s to be mounted side by side or an LV5600 and LV5350 or LV5300A to be mounted side by side in an EIA 19-inch rack.*
BLANK PANEL	LC2566	○	○		Blank panel for the LR2561
RACK-MOUNT ADAPTER	LR2731			○	Single rack mount adapter to install in a 19-inch EIA standard rack. One side is a blank panel.
RACK-MOUNT ADAPTER	LR2732			○	Dual rack mount adapter to install in a 19-inch EIA standard rack. It allows two sets of LV7300 to be installed side by side.
AC ADAPTER	GST90A12	○	○	Includ	AC adapter for LV5300A/LV5350/LV7300 (Included as a standard accessory for the LV7300)
REMOTE CONTROLLER	LV7290	○	○	○	One remote controller can be connected up to 8 units of waveform monitor or rasterizer via Ethernet. .

* Please be advised that the LV5350 and LV5300A can only be installed on the right side of the LR2561.

LV5350 standard / LV7300-SER01 SDI Input

LV5300A standard / LV7300-SER02 SDI input with eye pattern

Both the LV5350 and LV5300A monitor SDI signals. The LV5300A can also display EYE pattern.

The LV7300 can be configured with or without an EYE pattern display.

Video analysis

The LV5300A / 5350 / 7300 provide a full set of video displays including waveform, vector, 5 BAR gamut, CINELITE™ II, and CIE chromaticity diagram. In addition to the various displays, quality of experience (QoE) monitoring such as freeze, black, gamut, help ensure all potential issues with content are easily diagnosed.

Audio support

Embedded SDI audio can be displayed on meters for basic level and presence monitoring.

Approved standard	SMPTE ST 299, SMPTE ST 272 48 kHz/24 bit/L-PCM
Synchronization	All are synchronized with the video clock. All input SDI signals are synchronized.
Display channels	8ch
Display dynamic range	SDI embedded audio
Level accuracy	-60dBFS/-90dBFS/Reference level ±3dB ±0.3dB (-50 to 0dBFS, 1kHz, signal source impedance 40Ω or less)
Frequency characteristics	30Hz to 20kHz ±0.4dB (4dBu, 1kHz reference, TRUE PEAK response) 20Hz to 20kHz +0.4dB, -0.6dB (4dBu, 1kHz reference, TRUE PEAK response)
Meter response model	TRUE PEAK/PPM type I/PPM type II/VU
Peak hold time	0.0 to 5.0 sec (0.5-sec steps)/HOLD
Level setting	-40.0 to 0.0dBFS (reference level, warning over level)

Lissajous, surround and status can be displayed by adding LV5300-SER20/LV5350-SER20/LV7300-SER20

SDI data analysis

The status display summarizes CRC and embedded audio errors in the SDI signal. An event log, data dump, and phase difference measurements can be used to troubleshoot.



Screen capture function

A screen capture function to capture the display screen as still image data and a frame capture function to capture 16 frames of data are available. The captured data can be saved in BMP format in comparison with the input signal, as well as the display on the monitor, and allowing confirmation with an external PC.

Time code display

Embedded time code data can be verified and displayed. The time code can also be used as the timestamp of the event log.

SDI Inputs and outputs

Two (2) SDI inputs BNC connector
Two (2) SDI outputs BNC connector
Output re-clock signal

The SDI signals of the input terminals relock output to the output terminals, respectively.

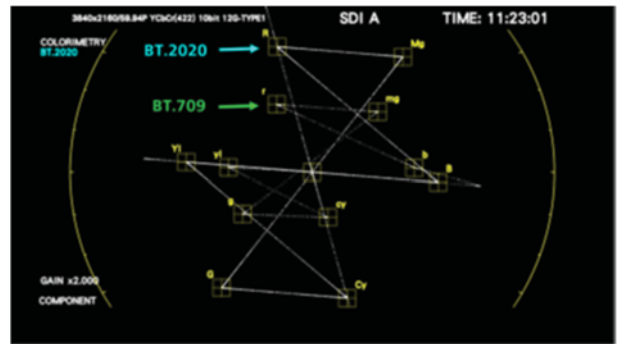
Select re-clock signal

The signals of the input terminals can be switched/relock output.

BT.709 compatible vectorscope scale

UHDTV (ARIB STD-B66) and HLG color bars (ARIB STD-B67) contain BT.2020 and BT.709 colors. This allows quick verification of the vector coordinates of a BT.709 color bar, useful for BT.2020 and BT.709 video content production.

BT.709 color bar vector display



SCTE-104 compatible for ANC data analysis function

In Japan, ARIB-STD B39 (NET-Q) is used for starting and replacing commercials while in other countries SCTE-104 is commonly used.

Recently, SCTE104 has been used in operation systems in Japan too.

We support SCTE-104 for efficient operation worldwide.

SCTE-104 packet display (text display)



SCTE-104 detection display (Picture Screen)



SR Live Metadata display

The ZEN series waveform monitors and rasterizers LV5600/LV7600/LV5350/LV5300A/LV7300 decode and display the "SR Live Metadata" packet used by Sony Imaging Products & Solutions Inc("Sony").

SR Live Metadata display

1920x1080/59.94P YCbCr(4:2:2) 10bit 3G-A			SDI A			TIME: 09:34:54		
SR Live Packet								
INTERFACE LINE No. 14								
No.	ITEM	VALUE	CTRL[Abs]	No.	ITEM	VALUE	CTRL[Abs]	
1	Table Version	V 1.00	++	14	Knee	OFF	OFF	
2	OETF	HLG	++	15	Knee Point	96%	[-15]	
3	Transfer Matrix	BT.2020	++	16	Knee Slope	0.19	[+37]	
4	Color Gamut	WIDE-BC	++	17	Knee Saturation	OFF	OFF	
5	Conversion Mode	SR AIR ON	++	18	Knee Saturation Level	0.50	[+0]	
6	HDR Look	Live	Live	19	Soft Knee	--	--	
7	HDR Black Compression	ON	ON	20	Knee Radius	--	--	
8	SDR Gain	-5.2dB	[-5.2dB]	21	SDR White Clip	ON	ON	
9	Master Black	1.03%	[+4.7]	22	SDR White Clip Level	109%	[-94]	
10	HDR Black Offset	Δ-0.99%	[-4.5]	23	HDR Knee	OFF	OFF	
11	Gamma Table	STD 5	STD 5	24	HDR Knee Point	349%	[+0]	
12	Gamma Step	0.45	0.45	25	HDR Knee Slope	0.65	[+0]	
13	Gamma Level	0.95	[-12]					

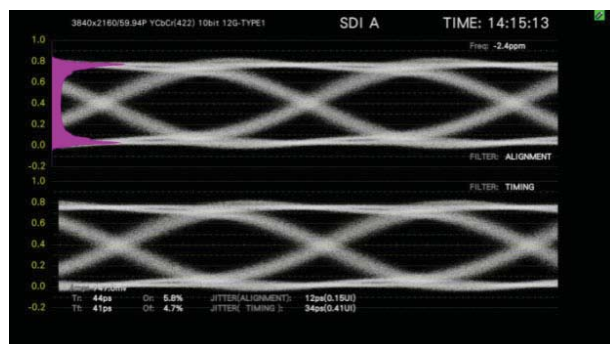
Eye pattern display (LV5300A standard/ LV7300-SER02)

Displays SDI signal eye pattern waveforms and jitter waveforms, and parameter measurements. Only SDI input 1 supports the eye pattern display. A histogram view is also available.

An eye pattern obtained with a 100kHz or higher filter (alignment jitter) and the eye pattern obtained with a 10Hz or higher filter (timing jitter) can be displayed together.

SDI input terminal	SDI INPUT 1
Display	Displays the waveform of the SDI input signal before it is equalized.
Screen	
1-screen display	The eye pattern for the selected filter is displayed on one screen.
2-screen display	The eye pattern for the timing filter and eye pattern for the selected filter are displayed on two screens.
Waveform display color	Selectable from seven colors.
Scale display color	Selectable from seven colors.
Method	ETS
Amplitude accuracy	800mV±5% (to 800mV input)
Time-axis display	2UI, 4UI, 16UI
Time-axis accuracy	±3%
Jitter filter	10Hz, 100Hz, 1kHz, 100kHz, TIMING, ALIGNMENT
Cursor measurement	Amplitude measurement/time measurement
Automatically measured items	Amplitude, rising edge, falling edge, timing jitter, and jitter overshoot
Histogram view	Displays the frequency distribution of the eye pattern waveform amplitude.

Concurrent display



*Upper: 100kHz or higher filter, Lower: 10Hz or higher filter, Magenta: Histogram

LV5300-SER11 / LV5350-SER11

Battery adapter: V-Mount

V mount adapter for battery compatible with IDX battery.

LV5300-SER12 / LV5350-SER12

Battery adapter: QR-Gold

QR Golden Mount Adapter for Battery Compatible with Anton Bauer Battery.

LV5300-SER11 V Mount



LV5300-SER12 Antonbauer

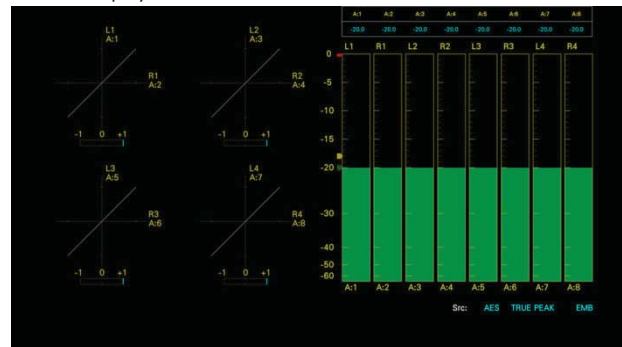


LV5300-SER20 / LV5350-SER20 / LV7300-SER20

Embedded audio analysis

Lissajous display, surround display, mute, clip error detection, etc. are added with this option. Numerous analysis displays are available, and simultaneously display of 8 channels from one SDI signal and 4 channels from 2 SDI signals is possible. Embedded audio playback system complies with SMPTE ST 299, 272.

Audio display



Embedded Audio

Approved standard SMPTE ST 299, SMPTE ST 272

48 kHz/24 bit/L-PCM

Synchronization condition: All are synchronized with the video clock. All input SDI signals are synchronized.

Lissajous display

Display channels 2ch x 1/2ch x 4

Display method X-Y/MATRIX

Correlator Indicates a value between -1 and 1 for the correlation between two channels.

Channel assignments

SINGLE LISSAJOU L/R

MULTI LISSAJOU L1/R1 to L4/R4

Surround display

Function Graphically displays the sound field.

Surround system 5.1ch

Channel assignments L/R/C/LFE/Ls/Rs/Lt/Rt

Status display

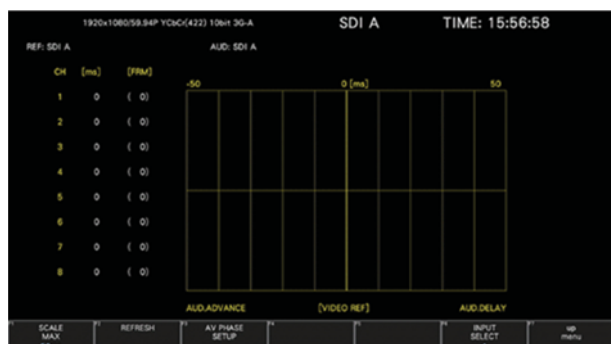
Level value	Indicates the audio level as a (dBFS) value
Error detection	Counts the number of errors that occurred on each channel.
Level over	Counts the number of times the input signal level exceeds the specified value.
Detection setting	-40.0 to 0.0dBFS
Clip	Counts the number of times a maximum value signal exceeding the specified number of samples is input successively.
Detection setting	1 to 100 samples
Mute	Counts the number of times a mute signal exceeding the specified duration of time is input successively.
Detection setting	1 to 5000ms
Parity error	Counts the number of times the parity bit of an input signal differs from the re-calculated parity value.
Validity error	Counts the number of times that the validity bit of an input signal is 1.
CRC error	Counts the number of times the CRC value of the channel status bit differs from the re-calculated CRC value.
Code violation	Counts the number of times the bi-phase modulation of an input signal is abnormal.

Lip sync measurement

Function	Measures the time difference between the SDI signal and digital audio signal and shows measurements as a value and on a graph.
Reference signal	Leader lip sync function.
Luminous level setting value	25 to 100%
Audio signal level setting value	-30 to 0dBFS
Supported audio signal	Embedded audio signal
Measurement range (bar display)	$\pm 50\text{ms}$ / $\pm 100\text{ms}$ / $\pm 500\text{ms}$ / $\pm 1.0\text{s}$ / $\pm 2.5\text{s}$
Measurement range (value display)	$\pm 3999\text{ms}$
Measurement resolution	1ms

* TSG patterns other than ours can be supported by configuring video signal settings and audio signal settings.

Lip sync display



LV5300-SER21 / LV5350-SER21 / LV7300-SER21

Closed captioning

Closed captioning

CEA-608, CEA-708 closed caption, teletext, OP47 subtitle embedded in an SDI signal can be decoded and displayed.

Superimpose Display

Displays English closed captions, European closed captions, and Japanese closed captions over the picture

English Closed Caption

Compliant Standards (Mapping Standards)

EIA-708	SMPTE ST 334
EIA/CEA-608-B (EIA-708-B)	SMPTE ST 334
EIA/CEA-608-B (EIA/CEA-608-B)	SMPTE ST 334
VBI (EIA/CEA-608-B Line21)	CIA/EIA-608-B

Supported Video Formats

SD, HD, 3G-A, 3G-B-DL,
3G(DL)-4K (close caption decoding only for link 1),
6G (close caption decoding only for sub 1),
12G (close caption decoding only for sub 1)

European Closed Caption

Compliant Standards

Teletext	VBI (ITU-R BT. 653-3 System B) (SD only), OP47
----------	---

Closed caption display



Simple Japanese Closed Caption Display

Displays a simple Japanese closed caption on the picture display. (Select HD, SD, analog, or portable closed caption to display. Select language 1 or 2.)

Compliant Standard ARIB STD-B37 short form data

Supported Video Formats

SD, HD, 3G-A,
3G(DL)-4K(close caption decoding only for link 1) * ,
12G (close caption decoding only for sub 1) *

Display

Display position control is supported only for HD and SD closed captions.

Characters

Only Kanji, roman numerals, katakana, hiragana, additional characters (ARIB STD-B24), additional kanji (ARIB STD-B24), and 1-byte DRCS are displayed.

Character Sizes

Supports only standard, medium, small, and specified size Codes

Logging

Logged Events Clear screen command, text closed caption display event, time code, TV commercial material check result

Data Format Text

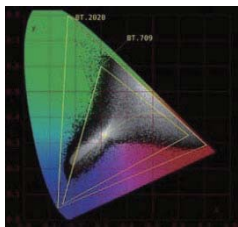
* Requires SER28.

LV5300-SER22 / LV5350-SER22 / LV7300-SER22

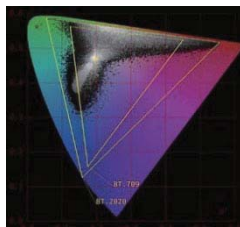
CIE chart display function

A chromaticity display of ITU-R BT. 601, ITU-R BT. 709, ITU-R BT. 2020 colorimetry. The display mode supports CIE 1931 (xy display) and CIE 1976 (u'v' display). Since the CIE chart can display two color gamuts, the tool can be used to suppress the color gamut of BT.709 using the equipment compatible with BT.2020, and to confirm the content that exceeds the color gamut of BT.709. In color display, the chromaticity point is displayed using the color (on the picture) in the video signal. The chromaticity can be measured at any pixel with the cursor.

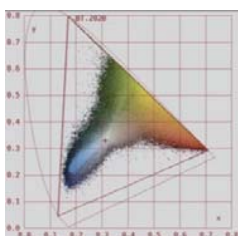
xy chromaticity coordinate display



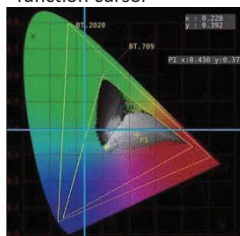
u'v' chromaticity coordinate display



xy coordinate color indication



A light blue is a measurement function cursor



LV5300-SER23 / LV5350-SER23 / LV7300-SER23

HDR analysis

In addition to HLG and PQ per ITU-R BT.2100, this option also supports level monitoring of S-log3 HDR signals. Level management can be made using the assumed luminance (cd/m^2) in a display considering OOTF. The video waveform includes the HDR scale added to the IRE scale. In the CINEZONE™ display, the luminance distribution of the HDR area can be easily confirmed with the SDR area shown in monochrome, and the HDR content with a color according to the brightness.

Approved standard

ITU-R BT. 2100 (HLG, PQ), S-Log 3, C-Log, Log-C

Supported format

All formats except SD-SDI.

HDR Scale

By associating waveform and histogram with the HDR scale, management of the video with brightness is simplified.

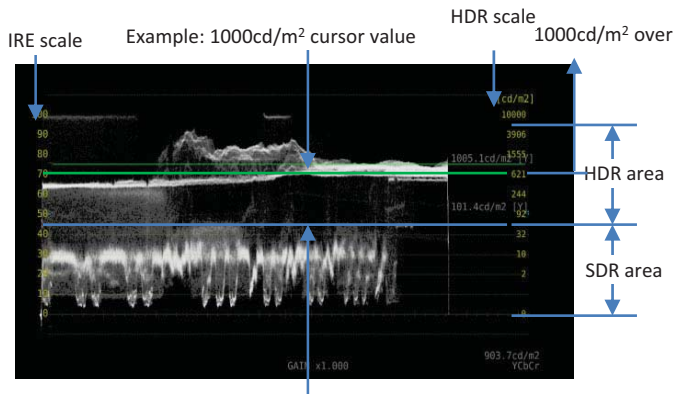
HDR zone display

The luminance distribution of the HDR area can be easily confirmed by coloring the SDR area with monochrome and the HDR with a color according to the brightness.



The SDR part is monochrome, the HDR region is colored according to luminance. Above the upper limit value is colored with magenta. The upper limit value, the reference value, the lower limit value can be varied.

HDR waveform display



HDR point measurement

The crosshair cursor can be freely moved, with up to 3 points measured simultaneously.



PQ setting

P1(S: 884,L: 261)3243.6cd/m2

HLG setting SYSTEM GAMMA OFF

P1(S: 884,L: 261) 623.9%

HLG setting System Gamma On

P1(S: 884,L: 261) 456.1cd/m2

S-Log3 setting System Gamma Off

P1(S: 884,L: 261) 809.1%

LV5300-SER24 / LV5350-SER24 / LV7300-SER24

SDI signal generation

The optional generator provides SDI test signals, useful for device or network troubleshooting. The generator supports HD-SDI through 12G-SDI with HD multi format color bar and patterns, multiple overlays of moving boxes and embedded audio, flat field at any level, and a 4K multi format color bar.

* The SDI signal generation function of 12G-SDI requires LV5300-SER28/LV5350-SER28 /LV7300-SER28options.

* The LV5300A/LV5350/LV7300 are output from the SDI output terminal 2 according to the output setting.

Output pattern

100% color bar, 75% color bar, HD multiformat color bar *1, 4K multiformat color bar *1, color raster, gamma, cross hatch, 10 step, limit lamp, check field, lip sync pattern(SER20), HDR color bar (SER23) *1

Scrolling *2

Direction ON/OFF
8 directions (up and down, left and right, and combinations thereof)

Speed range and unit 4 to 124 dots per frame (field), 4 dot units.

Moving Box *2

Color ON/OFF
WHITE, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, BLACK

Speed 1 to 3

Embedded audio

- Number of Embedded Channels 16channels max. *3
- Embedding On/Off On/off at the audio group level
- Audio Level -20d BFS, -18 dBFS, 0 dBFS, mute
- Audio Frequency 1kHz
- CRC Error Addition An incorrect CRC is inserted into the Y component of the first line.

*1 It cannot be set in horizontal 1280, 4096, and 2048 pixel format.
 *2 Either scrolling, or moving box can be selected.
 *3 For 4096 × 2160 6G and 2048 × 1080 3G-B-DL, only 8 channels are embedded.

LV5300-SER25 / LV5350-SER25 / LV7300-SER25

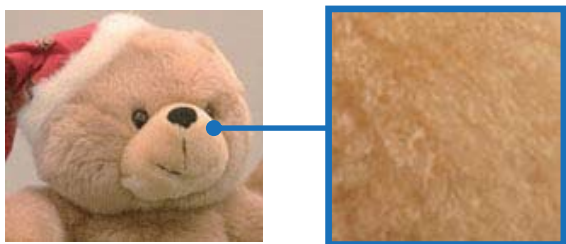
Focus assist

This option adds a new, proprietary focus detection algorithm based on nonlinear super-resolution technology to aid in scene focus conditions. Focus is determined with high sensitivity and repeatability even with difficult, low-contrast images. In addition, sensitivity can be selected from 5 levels according to the video scene.

Focus assist display



After focus adjustment
 (The green part is the focus adjustment point)



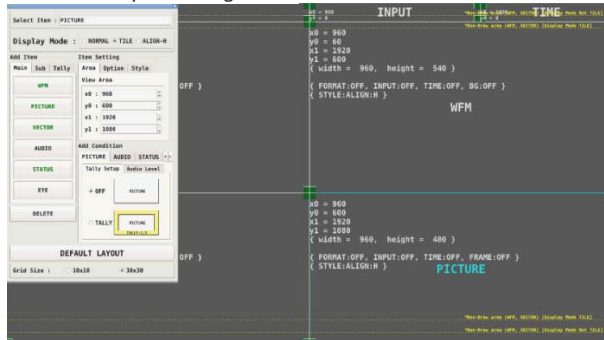
Enlarged view (After focus adjustment)

LV5300-SER26 / LV5350-SER26 / LV7300-SER26

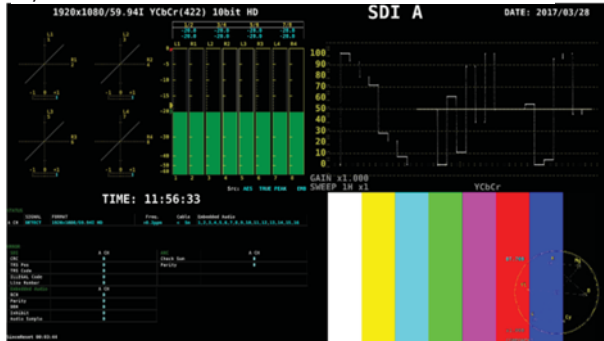
Customized layout

Users can size and position all video displays, waveforms, vectorscopes, gamut views, audio tools, etc as desired to optimize the screen for any specific workflow or user. Two input signals can be displayed simultaneously, or one input signal can be displayed on multiple screens.

Customized layout setting screen



Layout Set measurement screen

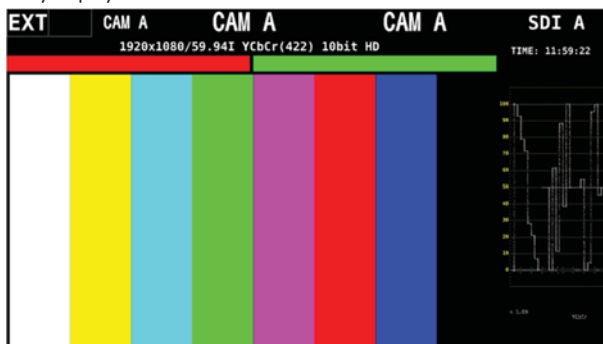


LV5300-SER27 / LV5350-SER27 / LV7300-SER27

Tally display

Fast switching of tally display by remote terminal is possible. For the camera ID, a fixed name can be assigned to each channel in the setting of this unit.

Tally display



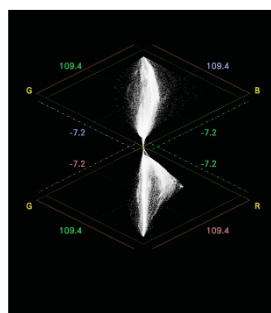
LV5300-SER28 / LV5350-SER28 / LV7300-SER28

4K/UHDTV video

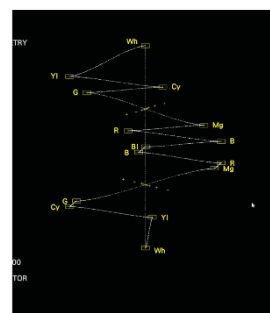
Adds support for 4K/UHDTV signals via 12G/6G- SDI single link.
 *12G/6G-SDI signal is input terminal 1 only.

LV5300-SER40 / LV5350-SER40 / LV7300-SER40

Extended vector display function



RGB VECTOR



YCbCr VECTOR

Specifications

SDI video signal formats and standard

SD video signal format and standard

Color System	Quantization	Image	Field Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	720 × 487	59.94 /I	SMPTE ST 259
		720 × 576	50 /I	

HD video signal format and standard

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	1280 × 720	60/59.94/50/	SMPTE ST 292-1
			30/29.97/25/24/23.98 /P	SMPTE ST 296
			60/59.94/50 /I	SMPTE ST 274
		1920 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 292-1
			30/29.97/25/24/23.98 /PsF	

3G-A video signal format and standard

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard	
YCbCr 4:2:2	10bit	1920 × 1080	60/59.94/50 /P	SMPTE ST 274 SMPTE ST 425-1	
			48/47.95 /P	-	
		2048 × 1080	60/59.94/50/48/47.95 /P	SMPTE ST 425-1 SMPTE ST 2048-2	
	12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274	
			30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
		2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
YCbCr 4:4:4	10bit	1280 × 720	60/59.94/50/	SMPTE ST 296	
			30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
			60/59.94/50 /I	SMPTE ST 274	
		1920 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
			30/29.97/25/24/23.98 /PsF		
	2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1		
		30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2		
	12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274	
			30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
		2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1	
30/29.97/25/24/23.98 /PsF			SMPTE ST 2048-2		
RGB 4:4:4		10bit	1280 × 720	60/59.94/50/	SMPTE ST 296
				30/29.97/25/24/23.98 /P	SMPTE ST 425-1
	60/59.94/50 /I		SMPTE ST 274		
	1920 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1		
		30/29.97/25/24/23.98 /PsF			
2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1			
	30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2			
12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274		
		30/29.97/25/24/23.98 /P	SMPTE ST 425-1		
	2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 425-1		
		30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2		
XYZ 4:4:4	12bit	2048 × 1080	30/25/24 /P	SMPTE ST 425-1	
			30/25/24 /PsF	SMPTE ST 428	

3G-B-DL video signal formats and standard

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	1920 × 1080	60/59.94/50 /P	SMPTE ST 274 SMPTE ST 372 SMPTE ST 425-1
			48/47.95 /P	-
		2048 × 1080	60/59.94/50/48/47.95 /P	SMPTE ST 372 SMPTE ST 425-1 SMPTE ST 2048-2
	12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 372
		2048 × 1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1
YCbCr 4:4:4	10bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 372
		30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
	2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 372	
		30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
		30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2	
12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274	
		30/29.97/25/24/23.98 /P	SMPTE ST 372	
	2048 × 1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
		30/29.97/25/24/23.98 /P	SMPTE ST 372	
	2048 × 1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
		30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2	

RGB 4:4:4	10bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 372
		30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
	2048 × 1080	30/29.97/25/24/23.98 /P	SMPTE ST 372	
		30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
		30/29.97/25/24/23.98 /PsF	SMPTE ST 2048-2	
12bit	1920 × 1080	60/59.94/50 /I	SMPTE ST 274	
		30/29.97/25/24/23.98 /P	SMPTE ST 372	
	2048 × 1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1	
XYZ 4:4:4	12bit	2048 × 1080	30/25/24 /P	SMPTE ST 372
			30/25/24 /PsF	SMPTE ST 425-1
			30/25/24 /PsF	SMPTE ST 428

3G(DL)-4K Video Signal Formats and Standards

Square

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 425-3 SMPTE ST 2036-1
			30/29.97/25/24/23.98 /PsF	-
		4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 425-3 SMPTE ST 2048-1
			30/29.97/25/24/23.98 /PsF	-

2 sample interleave

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 425-3 SMPTE ST 2036-1
			30/29.97/25/24/23.98 /PsF	-
		4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 425-3 SMPTE ST 2048-1
			30/29.97/25/24/23.98 /PsF	-

* You also need the SER28.

* When these signals are displayed, phase differences of up to 100 clocks (approx. 0.67μs) between links are automatically corrected.

* 3G-B-DS links are supported.

6G video signal formats and standards (2 sample interleave)

Color System	Quantization	Image	Frame Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2081-10
		4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10

* Type 1 of 12G-SDI is supported.

12G video signal formats and standards (2 sample interleave)

Color System	Quantization	Image	Frame Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840 × 2160	60/59.94/50 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
			48/47.95/P	-
	4096 × 2160	60/59.94/50/48/47.95 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
12bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
		30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
	4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
		30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
YCbCr 4:4:4	10bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
			30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
	4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
		30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
12bit	3840 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
		30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
	4096 × 2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	
		30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10	

* Type 1 of 12G-SDI is supported.

TSG (SER24) SDI video signal formats and standard

HD video signal formats and standards

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	1280x720	60/59.94/50 /P	SMPTE ST 292-1
			30/29.97/25/24/23.98 /P	SMPTE ST 296
		1920x1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 292-1
		30/29.97/25/24/23.98 /PsF		

3G-A, 3G-B-DL video signal formats and standards

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	1920x1080	60/59.94/50/48/47.95 /P	SMPTE ST 274
			48/47.95 /P	SMPTE ST 425-1
		2048x1080	60/59.94/50/48/47.95 /P	SMPTE ST 425-1 SMPTE ST 2048-2
YCbCr 4:4:4	10bit	1920x1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 425-1
		2048x1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1
			30/29.97/25/24/23.98 /P	SMPTE ST 2048-2
RGB 4:4:4	10bit	1920x1080	60/59.94/50 /I	SMPTE ST 274
			30/29.97/25/24/23.98 /P	SMPTE ST 425-1
		2048x1080	30/29.97/25/24/23.98 /PsF	SMPTE ST 425-1
			30/29.97/25/24/23.98 /P	SMPTE ST 2048-2

6G video signal formats and standards(2-sample interleave)

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840x2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2081-10
		4096x2160	30/29.97/25/24/23.98 /P	SMPTE ST 2048-1 SMPTE ST 2081-10

* You also need the SER28.

12G video signal formats and standards (2-sample interleave)

Color System	Quantization	Image	Frame (Field) Frequency /Scanning	Supported Standard
YCbCr 4:2:2	10bit	3840x2160	60/59.94/50 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
			48/47.95 /P	-
		4096x2160	60/59.94/50/48/47.95 /P	SMPTE ST 2048-1 SMPTE ST 2082-10
YCbCr 4:4:4	10bit	3840x2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
			30/29.97/25/24/23.98 /P	SMPTE ST 2048-1 SMPTE ST 2082-10
RGB 4:4:4	10bit	3840x2160	30/29.97/25/24/23.98 /P	SMPTE ST 2036-1 SMPTE ST 2082-10
			30/29.97/25/24/23.98 /P	SMPTE ST 2048-1 SMPTE ST 2082-10

* You also need the SER28.

External synchronize input terminal

Input terminal	BNC terminal
Number of input terminals	1 line 2 terminals
Input impedance	15 kΩ Passive loop through
Input return loss	30 dB or more (50 kHz to 30 MHz, 75 Ω termination)
Maximum input voltage	± 5 V (DC + peak AC)
Input signal	Ternary synchronization signal or NTSC/PAL black burst signal 10 Field ID correspondence
Function	SDI reference signal input for video signal waveform display and phase difference display

Headphone output terminal

Output terminal	
LV5300A/LV5350	3.5 mm Mini jack 1 terminal (stereo)
LV7300	Standard jack 1 terminal (stereo)
Output signal	On the screen of the displayed audio signal, arbitrary 2ch (Downmixed Lt, Rt is also acceptable)

Monitor output terminal

SDI output terminal	
Function	Output screen for SDI monitor
Output terminal	BNC terminal
Number of output terminals	1
Output signal	Output liquid crystal display screen is output with HD, 3G-A, 3G-B-DL. 1920 × 1080 60,59.94,50 I/P, YCbCr 4:2:2(10bit)

* LV7300 outputs SDI monitor output terminal, LV5300A, LV5350 switch output of SDI output 2 terminal

TMDS output terminal(LV7300)

Function	The displayed screen is output for HDMI monitor.
Output terminal	HDMI terminal
Number of output terminals	1
Signal format	Single Link T.M.D.S
DDC function	Not supported
HOT PLUG detection function	Not supported
Output signal	Output liquid crystal display screen is output. 1920x1080 60 P, 59.94 P, 50 P

Control terminal

USB terminal	
Terminal shape	Standard A
Number of terminals	2
Standard	USB 2.0
Compatible device	USB memory, USB mouse, touch panel type monitor
For Ethernet terminal control	
Approved standard	IEEE802.3
Supported protocols	TELNET, FTP, SNMP, HTTP, SNMP
Input/output terminals	RJ-45
Function	Remote operation with an external PC or remote controller, File transfer, get status information
Types	10Base-T, 100Base-TX, 1000Base-T
Remote terminal	
Terminal shape	D Sub 15 pins (female)
Number of terminals	1
Control signal	LV- TTL level (LOW active)
Function	Preset recall, input signal switching, alarm output, tally
Alarm output	When a format alarm, various errors, fan abnormality, or internal temperature occurs

Display (LV5300A / LV5350)

Liquid crystal display	7 type TFT color liquid crystal
Resolution	1920x1080
Refresh rate	60 Hz, 59.94 Hz, 50 Hz (Free run or frequency synchronization to external synchronization signal)
Touch panel	Electrostatic capacity type touch panel

General specifications

Environmental conditions	
Operating temperature range	0 to 40 °C
Operating humidity range	85% RH or less (no condensation)
Optimal Temperature	10 to 30 °C
Operating Environment	Indoors
Elevation	up to 2,000 m
Overvoltage category	I
Pollution degree	2

Power supply

Voltage	DC 10 to 18 V
Power consumption (DC Power supply)	
LV5300A	80W max.
LV5350	60W max.
LV7300	80W max

Dimensions(excluding protrusions)

LV5300A	215 (W)x132 (H)x132(D) mm
LV5350	215 (W)x132 (H)x85(D) mm
LV7300	213 (W)x44 (H)x300 (D) mm
Weight(excluding accessories and battery option)	
LV5300A	2.95 kg max.
LV5350	2.5 kg max.
LV7300	2.25 kg max.

Accessories

AC adapter(LV7300 only)	x1
D sub 15 pin connector	x1
D sub 15 pin connector cover	x1
Manual (CR-ROM)	x1

LR2530 RACKMOUNT ADAPTER

The LR2530 is a dual rack mount adapter used to install LV5300A/LV5350 waveform monitors in a 19-inch EIA standard rack. It allows two sets of LV5300A/LV5350 to be installed side by side. (Two options of LV5300A + LV5350 need separately option compatibility.)
Compatible models: LV5300A / LV5350



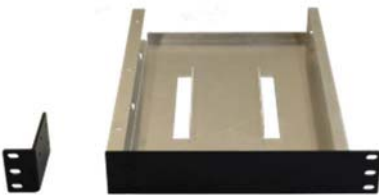
LC2535 BLANK PANEL

The LC2535 is a blank panel for the LR2530 rack mount adapter. Use it when installing a single LV5350 waveform monitor in the LR2530.



LR2731 RACKMOUNT ADAPTER

The LR2731 is a rack mount adapter used to install a LV7300 rasterizer in a 19-inch EIA standard rack. Because one side is a blank panel, use it to install a single LV7300.



LR2732 RACKMOUNT ADAPTER

The LR2732 is a dual rack mount adapter used to install LV7300 rasterizers in a 19-inch EIA standard rack. It allows two sets of LV7300 to be installed side by side.



GST90A12 AC Adapter

An AC adapter exclusive to Leader products. An AC cord is included.
* An AC adapter is attached to the LV7300.



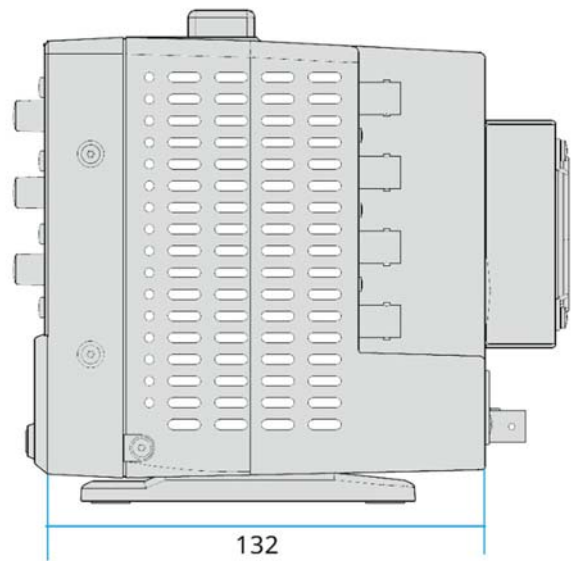
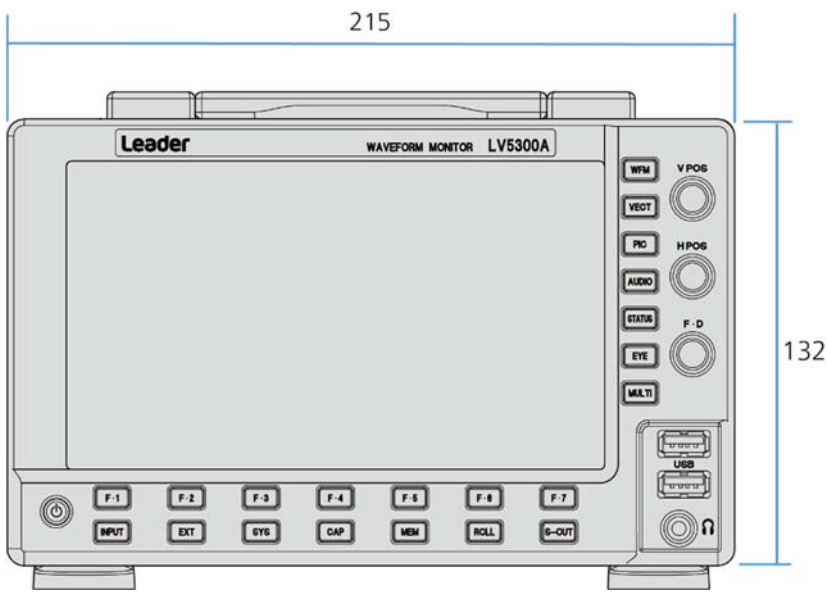
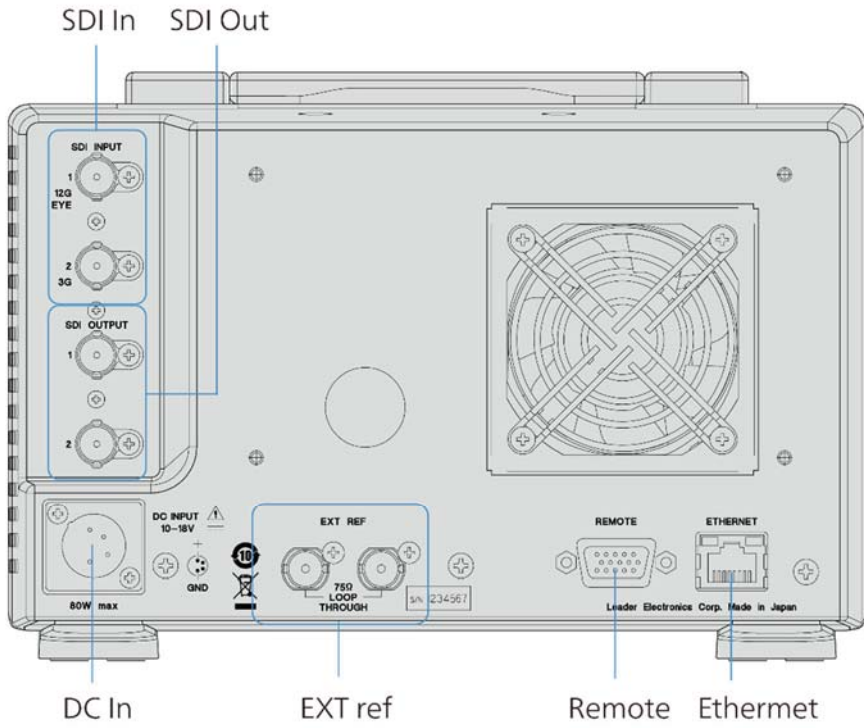
LV7290 Remote Controller

The LV7290 remote controller connects to the Ethernet port on the rear panel of the LV5300A/LV5350/LV7300 and can be used to remotely control the LV5300A/LV5350/LV7300. A single unit can connect and control up to eight LV5300A/LV5350/LV7300s.
Dimensions and weight: 482 (W) X 44 (H) X 110 (D) mm (excluding protrusions), 1.2 kg

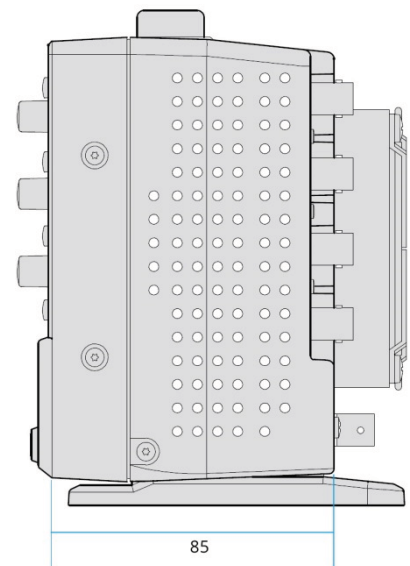
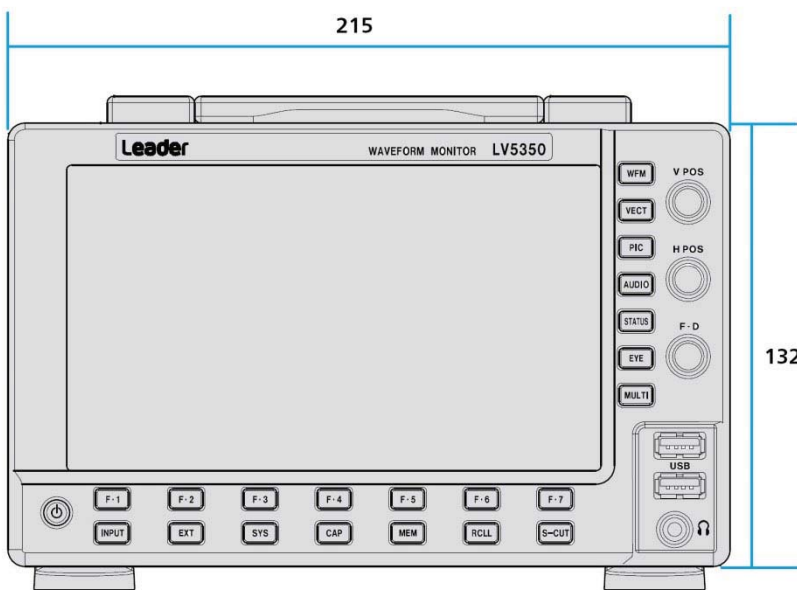
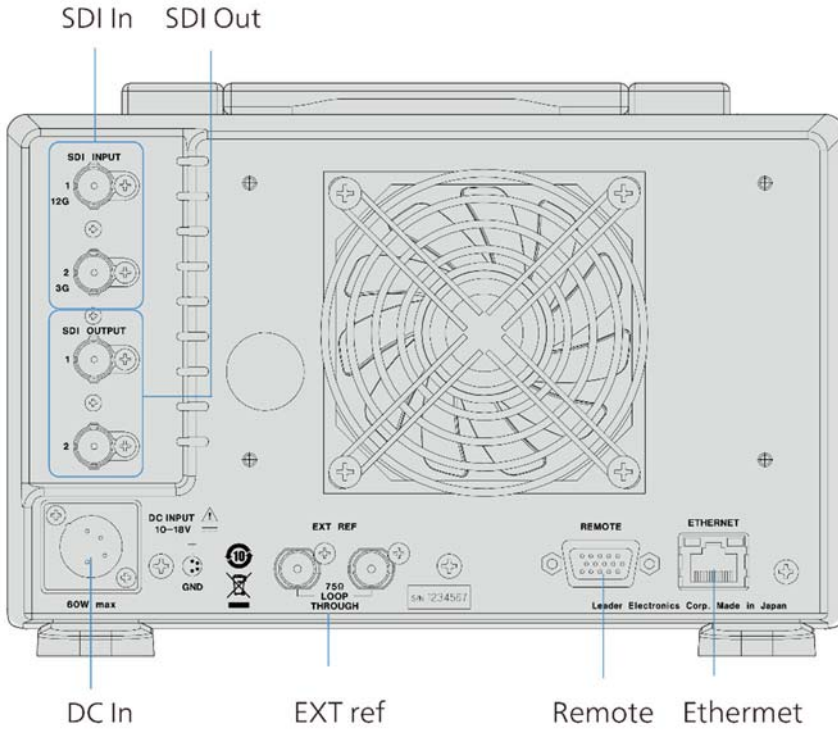


LV7290

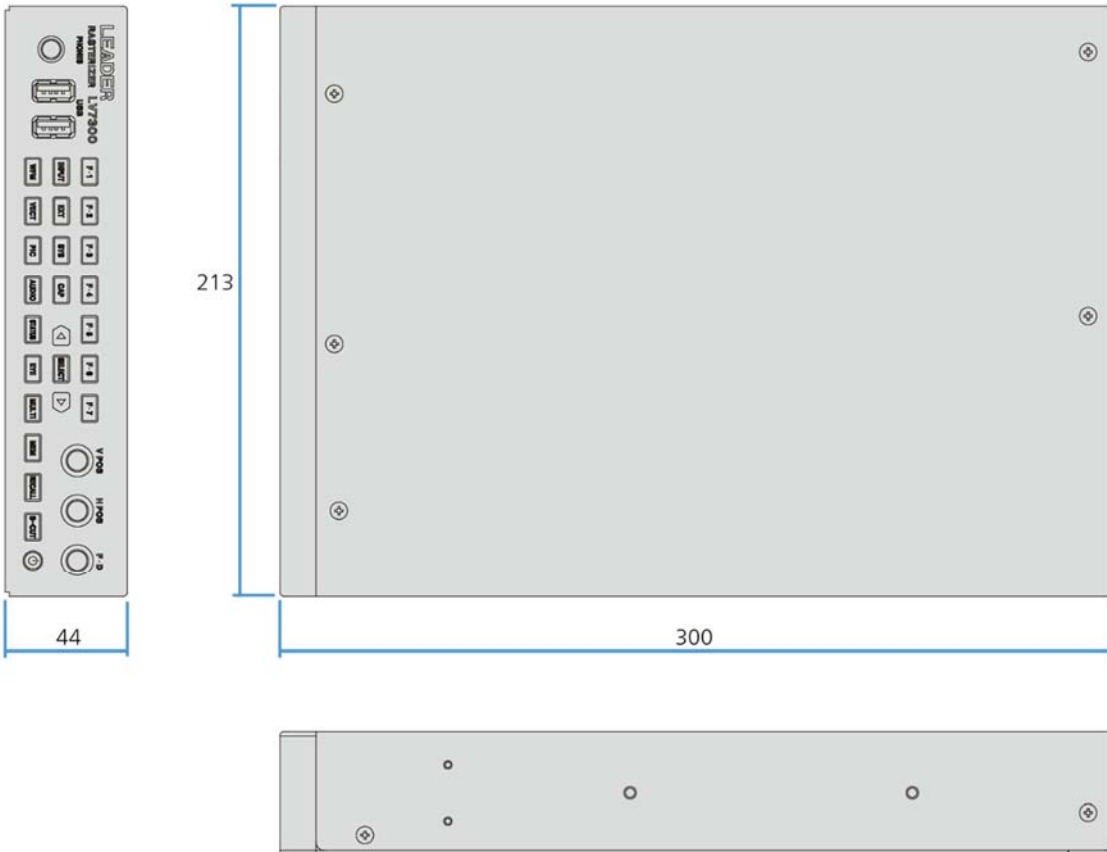
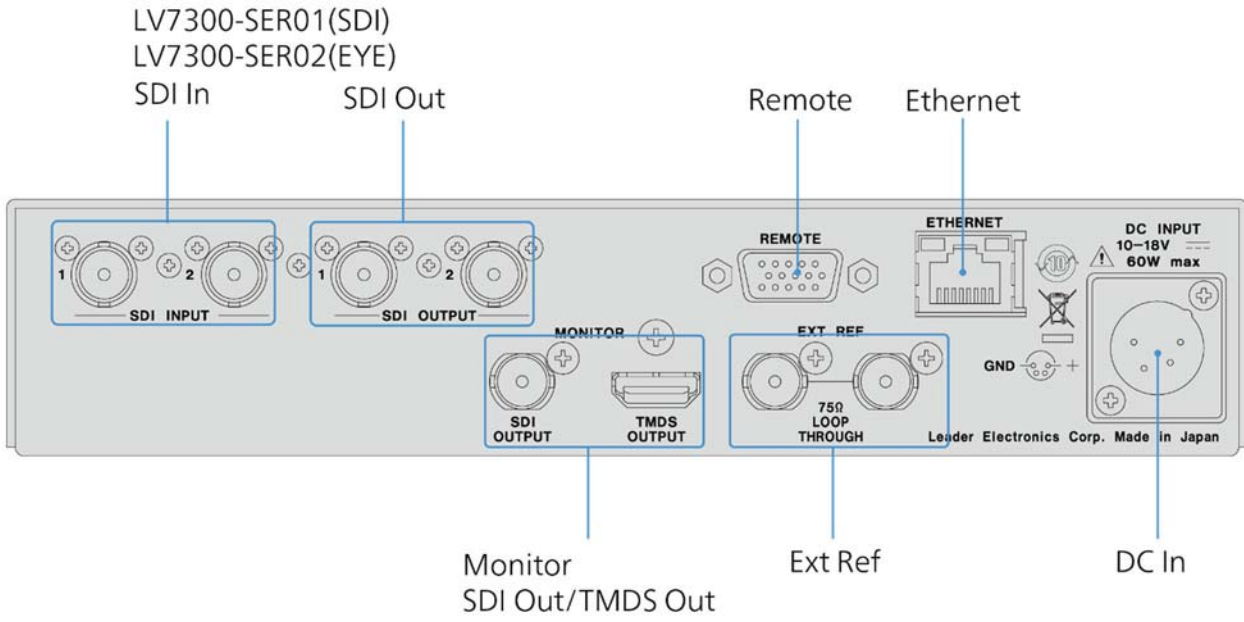
LV5300A



LV5350



LV7300



Leader

**DISTRIBUTOR CONTACT:
CALTRON PTE LTD
email: caltron@caltron.sg
www.caltron.sg**

www.leaderphabrix.com



This brochure is to be used for informational use only and is subject to change without notice and should not be construed as commitment by Leader Electronics of Europe Limited. Leader Electronics of Europe Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this brochure. Please visit www.leaderphabrix.com for latest product information.
August 2025