LEADER

Technology Innovator™

VIDEO TEST INSTRUMENTS

CATALOG No.13

LEADER ELECTRONICS CORP.

COMPANY PROFILE

Headquarters

LEADER INSTRUMENTS CORP. (LOS ANGELES)

LEADER INSTRUMENTS (H.K.) LTD. (HONG KONG)

LEADER ELECTRONICS CORP. (BEIJING OFFICE)

Leader Electronics Corp.

Leader Electronics selects and focuses on the professional video area of digital TV, on specialized portions of the consumer electronics area, as well as on the optical disk area for DVD/CDs and on the flat panel display area for LCD/PDP in order to achieve effective management. The evolution of electronics is endless and it is the most important technology as there can be no industry without the use of electronics. With experience and history of 56 years, we are committed to being a leading company in the area of test instrumentation so that we can always develop new products that apply to new electronics applications.

Company name

LEADER ELECTRONICS CORP.

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Nijverheidsweg 15, 5627BT Eindhoven, The Netherlands
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Company History

May, 1954:
Established Ohmatsu Denki Co., Ltd. Meguro City, Tokyo.

LSG 100
Test Oscillator
(1954)

January, 1959:
Established Ohmatsu Seiko Co., Ltd. spin off from the machinery division of the company.

August, 1960:
Purchased the land at the current place of Kohoku-ku, Yokohama City due to the business expansion by the development of new products and completed the first phase of construction and moved to this site.

November, 1963:
Established Osaka Sales Office.

May, 1966:
Unified the name to LEADR ELECTRONICS CORPORATION.

August, 1969:
Completion of Osaka Sales Office Building.

Septmber,1969:
Established LEADER INSTRUMENTS CORP. as an overseas affiliated company in New York.

January, 1971:
Established Sendai Sales Office.

June, 1972:
Established Fukuoka Sales Office.

October, 1977:
Completion of Northern Kanto Sales Office Building.

July, 1980:
Established LEADER INSTRUMENTS (H.K.) LTD. as an overseas affiliated company in Hong Kong.

August, 1981:
Completion of Sendai Sales Office.

LBO 5860
Waveform Monitor
(1981)

December, 1983:
Completion of Tokai Sales Office.

May, 1984:
Completion of Fukuoka Sales Office.

March, 1986:
Built Tsunashima Factory anew.

November, 1986:
Built Head Office Main Building anew and moved departments of technology and administration there.

April, 1988:
Established a resident office in England.

December, 1989:
Established LEADER INSTRUMENTS (EUROPE) LTD. as an overseas affiliated company in England.

May, 1990:
Established Hokuriku Sales Office.

November, 1990:
Established Singapore Resident Office in Singapore.

November, 1991:
Started stock exchange as Japan Securities Dealers Association Quotation System.

April, 1992:
Established Kanetsu Sales Office at 515-1, Kamikawakami, Kumagaya City, Saitama Pref.

April,1992:
Established Koshin Sales Office.

July, 1994:
Established LEADER INSTRUMENTS ASIA PTE., LTD. in Singapore.

April, 1995:
Closed Tokai Sales Office.

LV 5100D
Digital Waveform Monitor
(1995)

March, 1998:
Certified according to upgraded ISO9001 by International Standardization Organization.

October, 1999:
Liquidated LEADER INSTRUMENTS (EUROPE) LTD. in Europe.

March, 2002:
Liquidated LEADER INSTRUMENTS ASIA PTE., LTD. in Singapore.

April, 2003:
Established Beijing Resident Office in Beijing in China.

April, 2003:
Established Dong Guan Resident Office of LEADER INSTRUMENTS (HK) LTD., in Dong Guan in China.

October, 2004:
Established Shanghai Resident Office in Shanghai, China.

February, 2005
Renewed Head Office Building and merged Research Facility into the head office.

June, 2006:
Established Service Center in Beijing, China.

September, 2006:
Established Europe Resident Office in Netherland.

April, 2009:
Closed Dong Guan Resident Office in China and merged into LEADER INSTRUMENTS (HK) LTD.

LV 7380
Multi SDI Rasterizer *(2010)*

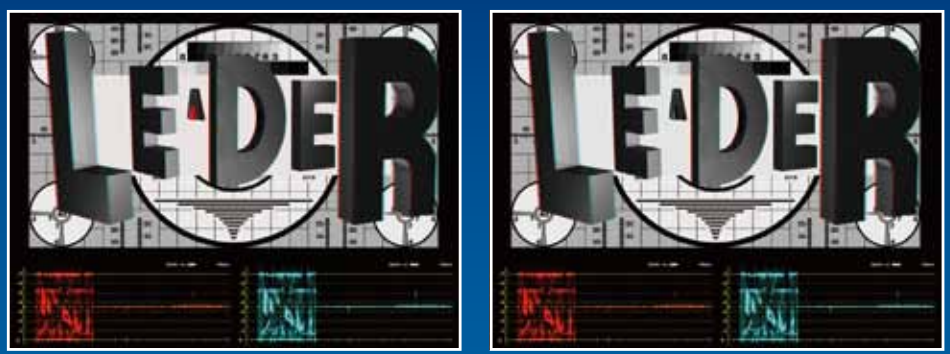
Audit and Registration of ISO9001, the internal standard for Quality Management Systems

The electronic measuring instrument, the mother tool of electronics, consistently requires the highest technology and quality.
The history of LEADER ELECTRONICS CORP. is indeed the history of the pursuit of higher technology and quality. In December 1994, we received an audit and successfully registered ISO9001, the international standard for quality management systems, and furthermore, as our basic policy of product development considering the environment. It gives us great satisfaction to offer products manufactured with outstanding technologies and quality, and moreover, to contribute to society through activities that take into consideration the environment.

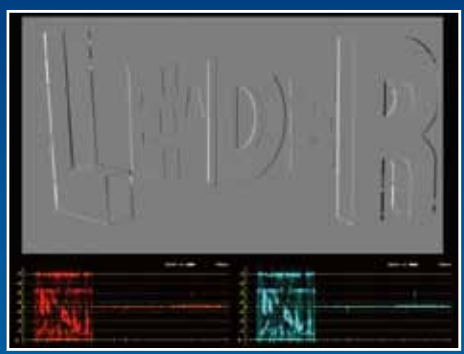
Additional Function Futures

3D Anaglyph

In this layout, the left and right images are displayed together, and the waveforms of the left and right signals are displayed side by side. The picture in which the left and right images are displayed together is an anaglyph display, and you can check 3D images by looking at the display while wearing red and cyan 3D glasses.



Anaglyph



Convergence

Applicable Model : LV 5380

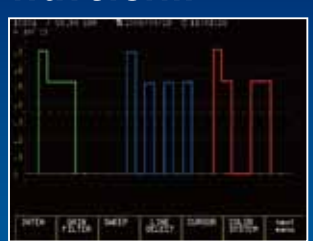
Histogram

EX.LV 5330

EX.LV 5800

Applicable Model : LV 7800, LV 7330 (Option), LV 5800, LV 5330 (Option)

Waveform



GBR

Applicable Model : LV 7800, LV 7380, LV 7330, LV 5800, LV 5380, LV 5330

Surround

5 LEAF Display

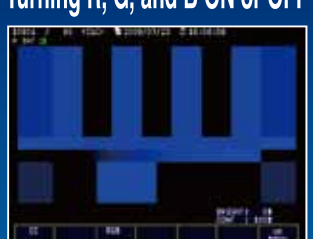
Applicable Model : LV 7800, LV 5800

Pseudo Composite

ACTIVE

Applicable Model : LV 7330, LV 5330

Turning R, G, and B ON or OFF



B

Applicable Model : LV 7330, LV 5330

Squeeze Feature

Supports aspect ratios of 4:3, 16:9 and 16:10.

Applicable Model : LV 7800, LV 7380, LV 7330

Multi-Screen

ch A/ch B:PIC+WFM

ch A/ch B:WFM+VEC

Applicable Model : LV 5380

PIC+WFM

PIC+WFM

PIC+WFM

Applicable Model : LV 7330, LV 5330

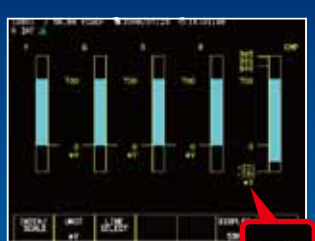
Aspect Marker

5x, SHADOW

Applicable Model : LV 7800, LV 7380, LV 7330, LV 5800, LV 5380,LV 5330

5 Bar (% or mV)

%



mV

Applicable Model : LV 7800, LV 7380, LV 7330, LV 5800, LV 5380, LV 5330

CINELITE Ⅱ (CINELITE and CINEZONE)

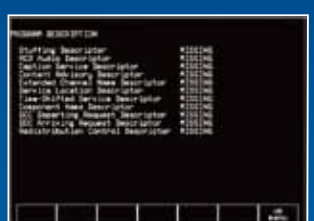
Applicable Model : LV 7330, LV 5330

Ancillary Data Analysis

EIA-708

EIA-608

VBI



PROGRAM DATA

Applicable Model : LV 7800, LV 7380, LV 7330, LV 5800, LV 5330

Selection Guide

Waveform Monitor

		RASTERIZER			MULTI	
		LV 7800 NEW	LV 7380 NEW	LV 7330 NEW	LV 5380	LV 5330
Display		DVI-I(4:3,16:9,16:10)	DVI-I(4:3,16:9,16:10)	DVI-I(4:3,16:9,16:10)	8.4-inch TFT color	6.5-inch TFT color
Format	3G-SDI	●LV58SER06/07				
	HD-SDI	●LV58SER01A/06/07	●	●	●	●
	DUAL LINK (2K)	●LV58SER01A/06	●	▲(Future)	●	● (1920X1080 only)
	SD-SDI	●LV58SER01A/06/07	●	●	●	●
	PAL/NTSC Composite	●LV58SER03				
	DVB ASI	●LV58SER04				
Picture Display		●LV58SER01A/06	●	●	●	●
Waveform Monitor		●LV58SER01A/06	●	●	●	●
Vector Display		●LV58SER01A/06	●	●	●	●
Audio Display		●LV58SER40A	●	●	●	● Level only
Digital Audio AES/EBU Output		●LV58SER40A	● 2 groups of 8ch			
Status Display		●LV58SER01A/06	●	●	●	●
Eye Pattern		●LV58SER02/07	Option (LV58SER02)			
Conversion matrix Y,P_B,P_R,GBR		●LV58SER01A/06	●	●	●	●
Digital Data Dump		●LV58SER01A/06	●	●	●	●
Equivalent Cable Length Measurement		●LV58SER01A	●			
Gamut Error (5 Bar)		●LV58SER01A/06	●	●	●	●
SDI-EXT REF Phase Difference Display		●LV58SER01A/06	●	●	●	●
Cinelite		Option(FS 3033)	●	●	Option (FS 3035)	●
Cinezone (PATENTED)		Option(FS 3033)	●	●	Option (FS 3035)	●
Screen Capture		●	●	●	●	●
Frame Capture		●LV58SER01A/06				
Universal AC Power Supply		●	12 V DC (10 to 18 V)	12 V DC (10 to 18 V)	12 V DC (10 to 18 V)	12 V DC (10 to 18 V)
CE		Upon request	Upon request	Upon request	Upon request	Upon request
Page		8, 9	10 to 12	13 to 16	20 to 22	23 to 25

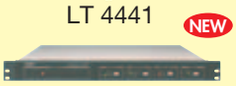
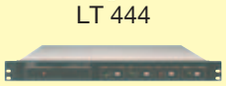
Signal Generator

		SIGNAL GENERATOR		
		LT 443D	LT 4400	410BB
Format	HD-SDI	HD/HDB	●	
	SD-SDI	SD/SDB	●	
	PAL/NTSC Analog Composite	CS		NTSC
Embeded Audio		●	●	
AES/EBU Audio		DA		
Genlock		GLA	●	
Monoscope Pattern		●		
Moving Pattern		●	●	
Bitmap Logo Mark with Pattern		●		
ID Character		●	●	
Analog Tri Level Sync Signal		GLA/BL	●	
Black Burst / HD Black		GLA/BL	●	● (BB)
Color Still Picture		OP70		
Pathological & Check Field		●	●	
Universal AC Power Supply		●	●	
CE		Upon request	Upon request	
Ethernet / word clock		●	●	
Page		40 to 43	44, 45	48

Waveform Monitor

TI	MONITOR		VECTOR SCOPE	WAVEFORM MONITOR	STEREO AUDIO MONITOR		
	LV 5800 	LV 5750 	5851V 	5861V 	5835 		
	6.5-inch TFT color	6.3-inch TFT color	CRT	CRT	CRT	Display	
	●LV58SER06/07					3G-SDI	Format
	●LV58SER01A/06/07	●				HD-SDI	
)	●LV58SER01A/06					DUAL LINK (2K)	
	●LV58SER01A/06/07	●				SD-SDI	
	●LV58SER03		PAL	PAL	Analog Audio	PAL/NTSC Composite	
	●LV58SER04					DVB ASI	
	●LV58SER01A/06	●				Picture Display	
	●LV58SER01A/06	●		●		Waveform Monitor	
	●LV58SER01A/06	●	●			Vector Display	
	●LV58SER40A	●			●	Audio Display	
	●LV58SER40A					Digital Audio AES/EBU Output	
	●LV58SER01A/06	●				Status Display	
	●LV58SER02/07					Eye Pattern	
	●LV58SER01A/06	●				Conversion matrix Y,P_B,P_R,GBR	
	●LV58SER01A/06	●				Digital Data Dump	
	●LV58SER01A	●				Equivalent Cable Length Measurement	
	●LV58SER01A/06	●				Gamut Error (5 Bar)	
	●LV58SER01A/06	●				SDI-EXT REF Phase Difference Display	
	Option (FS 3033)	Option (FS 3033)				Cinelite	
	Option (FS 3033)					Cinezone (PATENTED)	
	●	●				Screen Capture	
	●LV58SER01A/06					Frame Capture	
V)	●	12 V DC (10 to 18 V)				Universal AC Power Supply	
	Upon request	Upon request	Upon request	Upon request		CE	
	26 to 37	38	39	39	39	Page	

Changeover

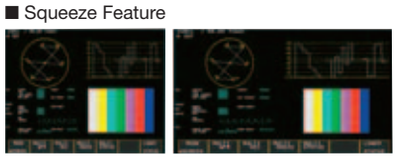
	Changeover LT 4441 NEW 	Changeover LT 4442 NEW 	Changeover LT 444 	Changeover LT 4440 
Inputs	10 input connectors 1 input connectors (TTL input)		1 input each for 11 connectors	
Outputs	10 output connectors 1 output connectors (CMOS)		1 output each for 11 connectors	
Dimensions	560 mm	400 mm	560 mm	400 mm
Switch	CH1 to CH3 : Relay Switches CH4 to CH11 : Electronic Switches		Relay Switches	
I/O Characteristics	CH1 to CH3 HD-SDI, SD-SDI, NTSC/PAL Analog black burst, HD Tri-level sync signal CH4 to CH8 NTSC/PAL Analog black burst, HD Tri-level sync signal CH9, CH10 AES/EBU Digital Audio CH11 Word clock (TTL)		CH1 to CH11 SD-SDI NTSC/PAL Analog black burst HD Tri-level sync signal AES/EBU Digital Audio CH1 to CH6 HD-SDI	
CE			Upon request	
Page	46, 47		46, 47	

MULTI RASTERIZER

LV 7800

LEADER

■ Squeeze Feature



Supports aspect ratios of 4:3, 16:9, and 16:10.

External Display

3G option

HD-SDI option

SD-SDI option

Dual Link 2K option

New

CE

Upon request

Multi Rasterizer

The LV 7800 is a new-concept multi rasterizer that enables you to freely combine all the LV 5800 series input and output units to provide flexible support for a variety of situations.

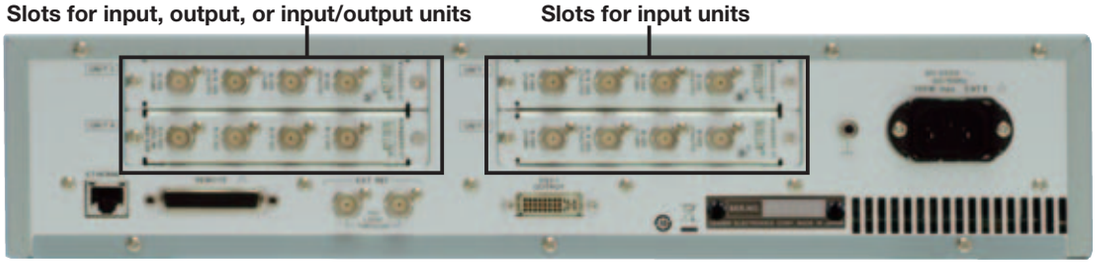
FEATURES

- **Slots for Four Units**
  The LV 7800 is equipped with two input slots and two input/output slots, which means you can install a maximum of four units.
  Each input and output unit operates independently.
- **External Sync Signal Input**
  The LV 7800 can receive tri-level sync signals and NTSC or PAL black burst signals. You can display video signal waveforms in phase with an external sync signal.
- **DVI-I Connector**
  You can view the various LV 7800 displays on an external XGA (1024 x 768) display by connecting the display to the DVI-I connector.
  Additionally, the vector, picture, and audio displays support displays with aspect ratios of 16:9 / 16:10 (in squeeze mode).
- **Preset Settings**
  The LV 7800 can store up to 60 frequently used setting configurations. You can also directly recall preset settings that have been assigned to the shortcut button.
- **Key Lock**
  The key lock feature is useful in preventing mistaken changes to the settings and in preventing accidental operations on the LV 7800.
- **USB Port**
  By connecting a USB memory device to the front panel USB port, you can take screen captures, record data, and save preset settings.
- **Ethernet Port**
  By running TELNET or FTP on a PC that is connected to the LV 7800 through the rear panel Ethernet port, you can control the LV 7800 remotely, monitor errors, and transfer files. (SNMP is also supported.)
- **Parallel Remote Connector**
  You can load preset settings, detect errors, switch inputs, and apply analog audio signals* through the rear panel remote connector.
  *To measure analog audio signals, an LV 58SER40A (DIGITAL AUDIO) unit is necessary.

* If you only use the flanges on the front panel to mount the instrument, the instrument case may be deformed, or the instrument may fall.

■Rear Panel (LV 58SER01A x 3 and LV 58SER40A x 1 for installation example)

Slots for input, output, or input/output units **Slots for input units**



■ Optional Units (Factory Option) Each unit is the same as the 5800 series units.

LV 58SER01A SDI input

LV 58SER04 MPEG decoder

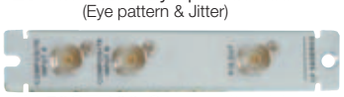
Necessary for connecting two external displays

LV 58SER20 DVI-I output unit

LV 58SER02 Eye pattern unit
(Eye pattern & Jitter)

LV 58SER06 3G-SDI INPUT NEW

LV 58SER21 Analog component output



LV 58SER03 Composite video input

LV 58SER07 3G-SDI Eye pattern NEW
(Eye pattern & Jitter)

LV 58SER40A Digital audio I/O
(Dolby Decoding Capability Option)

Input/Output Slots	
SLOT1, SLOT2	Slots for input units
SLOT3, SLOT4	Slots for input, output, or input/output units
Combinations of Supported Units	

Unit \ LV 7800 Slots	Does the Slot Support the Units			
	SLOT1 (Input)	SLOT2 (Input)	SLOT3 (Input/Output)	SLOT4 (Input/Output)
LV 58SER01A (SDI INPUT)	Yes	Yes	Yes	Yes
LV 58SER02 (EYE PATTERN)	Yes*	Yes*	Yes*	Yes*
LV 58SER03 (COMPOSITE INPUT)	Yes	Yes	Yes	Yes
LV 58SER04 (MPEG DECODER)	Yes	Yes	Yes	Yes
LV 58SER06 (3G-SDI INPUT)	Yes	Yes	Yes	Yes
LV 58SER07 (3G-SDI EYE PATTERN)	Yes	Yes	Yes	Yes
LV 58SER20 (DVI-I OUTPUT)	No	No	Yes	Yes
LV 58SER21 (ANALOG COMPONENT OUTPUT)	No	No	Yes	Yes
LV 58SER40A (DIGITAL AUDIO)	Yes*	Yes*	Yes*	Yes*

* Only one of this type of unit can be installed in an LV 7800.

DVI-I Output	
Output Connector	1
Signal Format	Single link T.M.D.S Analog RGB
Display Format	XGA(The effective resolution is 1024 x 768.) Wide displays are also supported (squeeze mode). * Only if the LCD panel has a resolution conversion feature.
DDC	Not supported
HOT PLUG	Not supported
Screen Capture	
Screen Capture	Capture the screen to an image file (only one screen capture is stored in internal memory)
Media	Internal memory (RAM) and USB memory
Data Output	Save screen captures in bitmap format to USB memory or send them to a PC over an Ethernet connection.
Preset Settings	
Number of Presets	60
Media	Internal memory (RAM) and USB memory
Recall Method	Front panel, remote connector, or Ethernet command
Copying Saved Settings	Copy preset settings to USB memory.
Loading Saved Settings	Copy all preset settings from USB memory to the LV 7800.
External Sync Signal Input	
Input Connector	1 pair of BNC connectors
Input Signal	Tri-level sync or NTSC/PAL black burst
Input Impedance	Passive loopthrough, 15 kΩ
Input Return Loss	30 dB or higher
Maximum Input Voltage	±5 V (DC + peak AC)
	* 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.
External Control Connectors	
USB Port	
Compliant Standard	2.0
Device	Only large-memory devices are supported.
Function	Take screen captures, record data, and save preset settings
Ethernet Port	
Compliant Standard	IEEE802.3 10BASE-T/100BASE-T
Connector	RJ-45
Function	Control the LV 7800 and monitor errors from a PC and save screen captures and data to a PC
Remote Connector	
Connector	25-pin D-sub (female)
Signal	LV-TTL level (Low active)
Function	Load preset settings, detect errors, switch inputs, and receive analog audio signals* * To measure analog audio signals, an LV 58SER40A (DIGITAL AUDIO) unit is necessary.
Headphone Output*	
Output Signal	SDI-embedded audio signal, or an audio signal that was received from an external source
Output Connector	One 6.3-mm stereo jack
Volume Adjustment	Volume knob
	* Headphone output is enabled when an LV 58SER40A (DIGITAL AUDIO) unit is installed.
Environmental Conditions	
Operating Temperature	0 to 40 ˚C
Operating Humidity	85 %RH or less (no condensation)
Operating Environment	Indoors
Operating Altitude	Up to 2,000 m
Overvoltage Category	II
Pollution Degree	2
Power Supply Requirements	90 to 250 VAC, 50-60 Hz, 150 W max.
Dimensions and Weight	482 (W) x 88 (H) x 450 (D) mm (not including protrusions), 8.5 kg 19 (W) x 3 1/2(H) x 17 3/4 (D) inch, 19 lbs.
Accessories	Instruction manual.....1 Power cord.....1 Cover/Inlet stopper.....1 25-pin D-sub connector.....1 25-pin D-sub connector cover.....1

■Display Examples

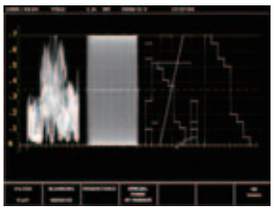
Multi-Screen

EX, LV 58SER01A, LV 58SER02 1 set each are installed

4 Inputs Picture

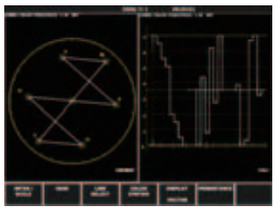
EX, LV 58SER01A 2 sets are installed

Waveform/4Y Palade



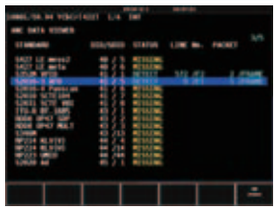
EX, LV 58SER01A 2 sets are installed

Waveform/Vector



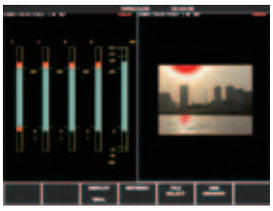
EX, LV 58SER01A 1 set is installed

Anc Date Viewer



EX, LV 58SER01A 1 set is installed

5 Bar/Gamut

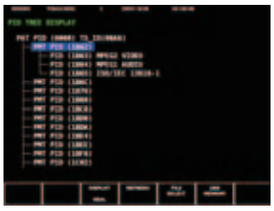


EX, LV 58SER01A 1 set is installed

EyePattern/Jitter

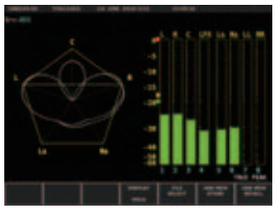
EX, LV 58SER01A 2, LV58SER02 1 set are installed

MPEG



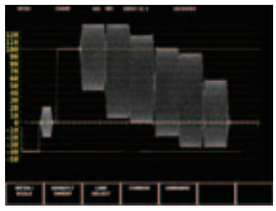
EX, LV 58SER04 1 set is installed

Audio



EX, LV 58SER40A 1 set is installed

Composite



EX, LV 58SER03 1 set is installed

■LV 7800-01 REMOTE CONTROLLER (sold separately)

Control over the Ethernet
The LV 7800-01 Remote Controller can control several instruments by simply changing the IP address of the device.
482 (W) x 44 (H) x 110 (D) mm,
19 (W) x 1 3/4 (H) x 4 3/8 (D) Inch

■LV 7800 op70 Speakers (Factory option)

You can have two 0.8 W stereo speakers installed in the LV 7800 rasterizer as a factory option. These speakers enable you to check audio. When you remove the headphones, the audio output switches to the speakers. (LV 58SER40A installed)

0.8 W +0.8 W

MULTI SDI RASTERIZER

LV 7380

LEADER

External display

■ Squeeze Feature

Supports aspect ratios of 4:3, 16:9, and 16:10.

HD-SDI

SD-SDI

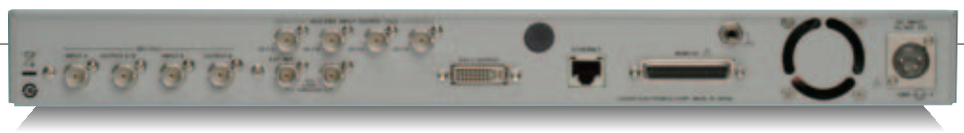
Dual Link 2K

5 Bar

New

CE

Upon request



CINELITE II INSIDE

Multi SDI Rasterizer

The LV 7380 is a 1RU, full rack rasterizer that displays video signal waveforms, vectors, and pictures of HD-SDI and SD-SDI signals on an external LCD monitor. The LV 7380 has a variety of useful features such as audio signal displays that include the Lissajous and level meter displays of embedded audio, simultaneous display of two SDI signals, and screen captures that can be saved to USB memory. In addition, gamut errors can be displayed over the picture. SDI signals that are received through channel A and B can be reclocked and transmitted from the OUTPUT A/B and OUTPUT B connectors with a press of one of the INPUT keys.
There is also a factory option that enables the display of eye patterns of SDI signals. All these features are packed in a small unit that is only 250 mm deep.

FEATURES

- **Two Serial Digital Inputs and Outputs**
  The LV 7380 is equipped with two SDI inputs. This enables the LV 7380 to receive two different SDI signals and to receive a single signal in dual link mode. The LV 7380 can also generate a serial reclocked SDI signal for each SDI signal that it receives.
  SDI signals that are received through channel A and B can be reclocked and transmitted from the OUTPUT A/B and OUTPUT B connectors with a press of one of the INPUT keys.
- **DVI-I Output**
  The screen image is displayed in XGA resolution (the effective resolution is 1024x768). The supported DVI-I output signals are single-link TMDS and analog RGB.
- **Multi-Screen Display and 2-Channel Simultaneous Display**
  The LV 7380 has a multi-screen display that can display a video signal waveform and a picture at the same time and a multi-screen display that can display vectors and an audio level meter in addition to the waveform and picture. It also has a multi-screen display that can display two SDI signals simultaneously. Different measurement modes can be assigned to the four different areas of the multi-screen display. (This feature is not available for the 2-channel simultaneous display.)
- **CINELITE II (CINELITE feature and Leader's patented CINEZONE feature)*1**
  The LV 7380 comes standard-equipped with CINELITE II (CINELITE and CINEZONE), which is a video signal luminance information analysis tool.
- **Picture Display**
  The LV 7380 uses fully digital picture display processing to achieve high precision and versatility. The display has a number of adjustment features such as brightness adjustment, contrast adjustment, gain adjustment, bias adjustment, and aperture adjustment. It also has monochrome, chroma up, gamut error, and safety marker display features. The LV 7380 is also standard-equipped with CINELITE II, a convenient tool for adjusting the lighting during filming.
- **Waveform Display**
  The video signal waveform display has gain, sweep, and cursor measurement features, along with RGB and pseudo-composite display features. In addition to video signal waveforms, the LV 7380 can also display vectors and display the Lissajous curves of embedded audio.
- **5 Bar Display**
  The 5 bar display enables the simultaneous monitoring of component and composite gamut.
- **Status Display**
  The status display can display the SDI signal's error count and error log, a data dump, and the phase difference between an external sync signal (a tri-level sync signal or an NTSC or PAL black burst signal) and the SDI signal.
- **Time Code Display**
  LTC or VITC time codes can be displayed.
- **Screen Capture**
  The display can be captured and stored as image data. Not only can captured data be displayed by the LV 7380, but it can also be compared with an input signal or saved to USB memory as bitmap data. The saved bitmap data can then be viewed on a PC.
- **Error Detection**
  SDI signal errors, such as HD-SDI signal CRC errors and SD-SDI signal EDH errors, and various errors related to embedded audio signals and ancillary data can be detected.
- **ANC Data Analysis**
  Various ancillary data can be analyzed, and the results can be displayed.
- **ID Display**
  IDs can be assigned to input channels. IDs are entered from the LV 7380 panel.
- **Equivalent Cable Length Measurement Feature**
  The LV 7380 converts the SDI signal attenuation to a cable length and displays the result.
- **Closed Caption Data Display**
  The LV 7380 can display the closed caption data embedded in an SDI signal over the picture display. It can analyze and display status and control information.
  1) CEA/EIA-608-B closed caption data in CDP packets that are defined by EIA-708-B
  2) CEA/EIA-608-B closed caption data
  3) VBI (CEA/EIA-608-B line 21) closed caption data
- **Display Mode Switch Keys • Audio • Presets**
- **Last Memory • External Remote Connector • Key Lock**
- **Shortcut Key • Ethernet Port**

*1 CINELITE is a registered trademark of LEADER ELECTRONICS CORP.

Video Signal Formats and Standards

Supported Formats of Single Link System Video

Color System	Quantization	Scanning	Frame (Field) Rates	Corresponding Standard
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M
		1080p	30/29.97/25/24/23.98	SMPTE 292M
		1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

* The picture display bit depth is 8 bits.

Supported Formats of Dual Link System Video

Color System	Quantization	Scanning	Frame (Field) Rates	Corresponding Standard
GBR 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE 372M (1920×1080)
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		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	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
GBR 4:4:4 (2K)	12 bit	1080p	24/23.98	(2048×1080)
		1080PsF	24/23.98	

When these signals are displayed, phase differences of up to 100 clocks (approx. 1.4 µs) between links A and B are automatically corrected.
If links A and B are not synchronized, the various error detection features that are shown on the status display do not operate correctly.

Format Settings
Link Format Switching Manually switched between single and dual link
Format Setting Manual switching. Only frame and field rates can be set automatically.

Audio Playback
Compliant Standards SMPTE-299M (HD-SDI) and SMPTE-272M (SD-SDI)
Quantization 24 bit
Clock Generation Generated from the video clock
Channel Separation 2 groups (from the same SDI input signal) of 8 channels are selectable.

Input/Output Connectors
SDI Input
Input Connectors 2 BNC connectors
2 inputs in single link mode (channels A and B)
1 input (link A and B) in dual link mode
Maximum Input Voltage ±2 V (DC + peak AC)
External Reference Input
Input Signal Tri-level sync or NTSC/PAL black burst signal
Input Connectors 1 pair of BNC connectors
Maximum Input Voltage ±5 V (DC + peak AC)
* 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.
* External synchronization cannot be used for 1080p/60, 59.94, 50.

Audio Input/Output Connectors
Input/Output 4 BNC connectors (8 channels)
Supported Format AES/EBU
Sampling Frequency Only 48 kHz is supported.
Input/Output Switching Use the menu to select whether the connectors are used as AES/EBU input connectors or as AES/EBU output connectors that are separated from the SDI signal.

SDI Output
Output Connectors 2 BNC connectors
Reclocks and transmits the input signal
1 output (switchable between channels A and B) in single link mode
1 output fixed to channel B
1 output (link A and B) in dual link mode

DVI-I Connector
Signal Format Single-link TMDS, analog RGB
Display Format XGA. The effective resolution is 1024 x 768.
DDC Not supported
HOT PLUG Detection Not supported
Output Connector 1 DVI-I connector

Headphone Output
Output Signal Separate any 2 channels of audio signals that are embedded in the SDI signal and output them (in sync with the video signal) or output the audio that is being received through the audio input connector.
Output Connector 1 stereo jack

Control Connectors
USB Port
Specification USB 2.0
Media Only USB memory devices are supported.
Function Used to save screen captures, event logs, preset data, and data dumps
Ethernet Port
Supported Protocols TELNET, FTP, SNMP
Input/Output RJ-45 connector
Function Used to control the LV 7380 from a PC and monitor errors and other events
Type 10Base-T/100Base-TX
Remote-Control Connector
Function Used to recall preset settings, display tally indications, switch input channels (A or B), and transmit the alarm signal.
Control Connector 25-pin D-sub (female)

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.
Data Output Screen captures can be saved as bitmap files to USB memory, or they can be saved in a file format that the LV 7380 can load.
Data Input Data saved to USB memory can be loaded and displayed on the LV 7380.

Preset Settings
Number of Presets 30

Display Format
1 Screen Display Waveform, vector, picture, audio, and status displays
Multi Screen Display Waveform and picture; waveform, picture, and vector; and waveform, picture, vector, and audio displays
4 Screen Display Waveform, picture, vector, audio, status, and eye pattern (optional) modes can be selected for each of the four areas of the display
2-Channel Simultaneous Display Waveform and picture display and waveform and vector display
Thumbnail Display Picture, audio level meter, and waveform displays
Displays can be turned ON and OFF.
* Waveform thumbnails can only be displayed in picture mode.

Waveform Display
Waveform Operations
Display Modes
Overlay Overlays component signals
Parade Displays component signals side by side
Blanking Period H and V blanking periods can be masked.
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 x 1 or x 5
Variable Gain x 0.2 to x 2.0
Amplitude Accuracy ≤ ±0.5 %
Horizontal Axis
Line Display x1, x10, x20, ACTIVE, or BLANK
Field Display x1, x20, or x40
Cursor Measurement
Amplitude Measurement %, V, or R%
Time Measurement Displayed in usec or msec
Frequency Display Computes and displays the frequency with the length of one period set to the time between two cursors.
Scale
Type % or V scale or digital values (when displaying GBR or RGB)
Thumbnail Display Can display thumbnails of picture displays and audio level meters.

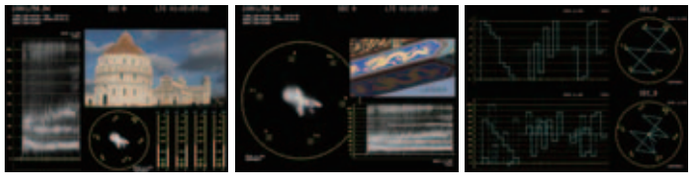
Vector Display
Gain x1, x5, or IQ-MAG
Variable Gain x0.2 to x2.0
Amplitude Accuracy ≤ ±0.5 %
Blanking Period Masked*
Scale
Type 75 % or 100 % (color bar)
IQ Axis Show or hide
Pseudo-Composite Display Artificially converts component signals into composite signals and displays the result
Thumbnail Display Can display thumbnails of picture displays and audio level meters.
* In the multi-screen display, the blanking period depends on the video signal waveform display blanking display settings.

5 Bar Display	
Function	Displays the peak levels of the Y, R, G, B, and composite signals
Error Level	Based on gamut error level and composite gamut error level settings.
Filter	1 MHz for HD and SD Removes transient errors
Phase Difference Display	
Display	Displays the phase difference between an SDI signal and the external sync signal both numerically and graphically In a dual link signal, the phase difference between links A and B can also be measured.
Display Range	
Vertical	Approx. ±1/2 frame
Horizontal	±1 line
Picture Display	
Image Quality Adjustment	Brightness, contrast, gain, bias, and aperture
Display Sizes	Fit, full frame, real, and full screen
Color Selection	R, G, and B can be turned off separately. Chroma gain and monochrome displays are available.
Marker Displays	
Aspect Marker Display	4:3, 13:9, 14:9, 16:9, or 2.39:1
Aspect Marker Format	Line, shadow (99 levels), or black
Safety Marker Size	ARIB TR-B4, SMPTE RP-218, or user-defined
CINELITE II	
CINELITE	f-Stop display, percentage display, and level display
CINEZONE	Displays the luminance levels in the picture using different colors
Embedded Audio and External Audio Displays	
Monitored Source	The audio signal applied to an AES/EBU input on the rear panel or the embedded audio in an SDI signal.
Lissajous Display	
Displayed Channels	2 (single) or 8 (multi)
Sound Image Display	
Channel Mapping	L, R, C, LFE, Ls (S), Rs, LL, or RR
Surround Formats	NORMAL/PHANTOMC
Level Meter Display	
Displayed Channels	2 or 8
Meter Response Model	TRUE PEAK, PPM type I, PPM type II, VU, LOUDNESS
Peak Hold Response Model	TRUE PEAK, PPM type I, PPM type II
Status Display	
Signal Detection	Detects the presence of an SDI signal
Format	Detected from the supported video signal formats (In a dual link signal, only the frame rate is detected)
Embedded Audio Channel	Displays the embedded audio channel number (In a dual link signal, only link A is supported)
Event Log	
Recording Capacity	Up to 1000 events
Recorded Events	Errors, changes in input type, time stamps, etc.
Data Output	Data can be saved as text files to USB memory or to a PC over an Ethernet
Data Dump Display	
Display Format	Displays data separated by serial data sequence or by channel
Line Select	Displays the selected line; displays markers on pictures
Sample Select	Displays from the selected sample
Jump Feature	Jumps to an EAV or SAV
Data Output	Data can be saved as text files to USB memory or to a PC over an Ethernet
Equivalent Cable Length Measurement	Converts the SDI signal attenuation to a cable length and displays the result
Supported Cables	HD-SDI: L-7CHD, LS-5CFB, 1694A SD-SDI: LS-5C2V, 8281, 1505A
Error Detection	CRC Error, EDH Error, TRS Error, Line Number Error, Illegal Code Error, Embedded Position Error, Cable Length Measurement Error, Gamut Error, Composite Gamut Error, BCH Error, DBN Error, Audio Parity Error, Checksum Error, ANC Parity Error
Ancillary Data Analysis	Audio Control Packet (In a dual link signal, only link A is supported) EDH Display (Only for SD) Format ID Display Closed Caption Analysis Display (Not supported for dual link signals) Inter-Stationary Control Signal (NET-Q) Display (Not supported for dual link signals) Data Broadcast Trigger Signals (Not supported for dual link signals) V-ANC User Data Display (Not supported for dual link signals) ANC Packet Display (In a dual link signal, only link A is supported) AFD Packet Display (Not supported for dual link signals)
Ancillary Data List Display (Not supported for dual link signals)	List Display Details, Dump Display
Time Display	Current Time Display, Elapsed Time,Time Code

Alarm Output	
Display Indication	If the fan stops working, the fan alarm is displayed (on the external display).
Remote Connector Output	When a video or audio error or a fan alarm occurs, a signal is transmitted from the remote connector to notify the user.
Other Display Features	
ID Display	An ID can be assigned to each input channel.
Tally Indication	Part of the remote connector can be assigned to tally indication in order to display tallies on the screen.
Environmental Conditions	
Operating Temperature	0 to 40 ˚C
Operating Humidity	85 %RH or less (no condensation)
Power Requirements	
Voltage	10 to 18 VDC
Power Consumption	50 W max.
Dimensions	482 (W) x 44 (H) x 250 (D) mm (excluding protruding parts), 19(W) x 1 3/4(H) x 9 7/8 (D) Inch
Weight	Approx. 2.6 kg (excluding options and accessories), 5.7 lbs.
Accessories	Instruction manual .....1 AC adapter.....1 25-pin D-sub connector .....1 25-pin D-sub connector cover.....1
Precautions	• Video signal waveform and vector displays have a maximum delay of one frame in reference to the picture display. • When using the 2-channel simultaneous display, the V sweep cannot be displayed on the video signal waveform display. • If the video signal waveform or the phase difference 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.

■ Short Cabinet Construction

■ Display Examples



■ Factory Option

LV 58SER02 Eye Pattern Unit

Can be used to observe eye pattern waveforms of SDI signals.(Jitter output cannot be used.)

Eye Pattern/ Jitter

LV 58SER02 EYE PATTERN UNIT SPECIFICATIONS

Supported Formats	
Data Rate	
HD-SDI	SMPTE292M 1.485 Gbps, or 1.485/1.001 Gbps
SD-SDI	SMPTE259M 270 Mbps
Eye Pattern	
Method	Equivalent time sampling method
Amplitude Accuracy	800 mV ±5 % for 800 mV input
Time Axis	2 / 4 / 16 Eye pattern Display
Time Axis Accuracy	±3 %
Jitter Filter	10 Hz HPF, 100 Hz HPF, 1 kHz HPF, 100 kHz HPF
Jitter Detection	
Method	Phase detection method
Time Axis	H rate or V rate
Time Axis Accuracy	±3 %
Jitter Filter	10 Hz HPF, 100 Hz HPF, 1 kHz HPF, 100 kHz HPF (* Doesn't support JITTER measurement of a DVB-ASI standard Eye pattern only.)

MULTI SDI RASTERIZER

LV 7330

LEADER

■ Squeeze Feature

Supports aspect ratios of 4:3, 16:9, and 16:10.

External Display

HD-SDI

SD-SDI

5 Bar

CE
Upon request

CINELITE II INSIDE

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**
  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

Video Signal Formats and Corresponding Standards

Single Link System Video

Color System	Quantization	Format		Corresponding Standard
		Scanning	Frame (Field) Rates	
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M
		1080p	30/29.97/25/24/23.98	SMPTE 292M
		1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

(only link A is supported for dual link)

Color System	Quantization	Format		Corresponding Standard
		Scanning	Frame (Field) Rates	
GBR 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE 372M (1920×1080)
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		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	30/29.97/25/24/23.98	
		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-299M, SD:SMPTE-272M
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)
Maximum Input Voltage
±2 V (DC + peak AC)
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
Output Signal
The LV 7330 extracts and transmits the audio signal embedded in an SDI signal.(Must be synchronized to the video signal.)
Output Connector
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
Specifications
USB 2.0
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
(SNMP will be supported in the future)
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.
Data Output
Screen captures can be saved as bitmap files or in a file format that the LV 7330 can load. They can be saved to USB memory or transmitted through an Ethernet and saved on a PC.
Data Input
Data saved to USB memory can be loaded and displayed on the LV 7330.

Presets Settings
Number of Presets
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
Time or Time Code Display

Waveform Display
Waveform Operations
Display Modes
Overlay
Overlays component signals.
Parade
Displays component signals side by side.
Timing
Computes and displays Y-C_B and Y-C_R.Uses a bowtie signal.
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
Amplitude Accuracy
±0.5 %
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.

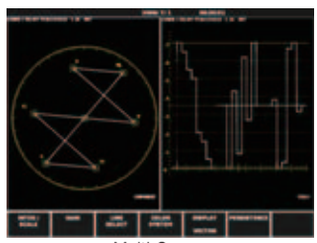
Vector Display
Gain
x1, x5, or IQ-MAG
Variable Gain
x0.2 to x2.0
Amplitude Accuracy
±0.5 %
Blanking Period
Masked

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.
Filter	Removes transient errors (The filter characteristics are the same as for gamut errors.)
Phase Difference Display	
Display	Displays the phase difference between an SDI signal and the external sync signal both numerically and graphically.
Display Range	
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	
Image Quality Adjustment	Brightness, contrast, chroma level, and aperture
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	
Reference Gamma	0.45 (ITU-R BT709)
User-Defined Correction Tables	3
External Correction Tables	5 (read from USB memory)
Percentage Display	Displays luminance or RGB components as percentages.
Level Display	Displays luminance or RGB components with 256 levels (8 bits).
Measured points	3
Measurement sizes	1 pixel, 3 x 3 pixels, or 9 x 9 pixels
CINEZONE Display	
Function	Displays the luminance levels in the picture using different colors
Display Colors	Linear (1024 colors) or step (12 colors)
Upper Limit Setting	-6.3 to 109.4 % (values above the upper limit are displayed using white)
Lower Limit Setting	-7.3 to 108.4 % (values below the lower limit are displayed using black)
Level Search Display	Displays a specified luminance level ±0.5 % using green on an otherwise monochrome picture display.
Luminance Level Setting	-7.3 to 109.4 %
Embedded Audio Display	
Lissajous Display	
Displayed Channels	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	
Displayed Channels	8ch / 2ch
Meter	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.

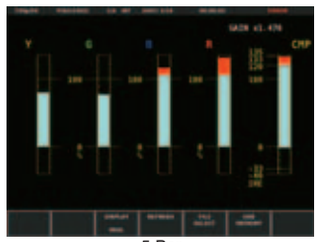
Status Display	
SDI Signal Error Detection	TRS Error, Line Number Error, CRC Error, EDH Error, Gamut Error, Composite Gamut Error, Parity Error, Checksum Error, BCH Error, Audio CRC Error
Audio Information Detection	Detects the presence of each audio channel
Error Count	Up to 100,000 errors (Only the 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
Line Select	Displays the selected line
Sample Select	Displays from the selected sample
Jump Feature	Jumps to an EAV or SAV
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 Supply	
Voltage	10 to 18 VDC
Power Consumption	18 W max.
Dimensions	215(W) x 44(H) x 250(D) mm (excluding protruding parts) 8 1/2(W) x 1 3/4(H) x 9 7/8(D) inch
Weight	1.3 kg 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

■ Display Examples


Multi-Screen


Multi-Screen

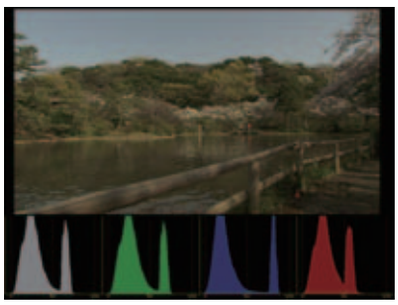

Phase Difference


5 Bar

LV 7330 Option

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

LV7330SER02 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)

New Measurement Method

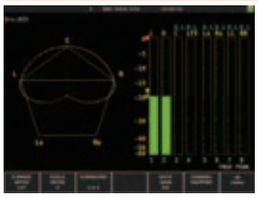
LEADER

Surround Display (5 LEAF)

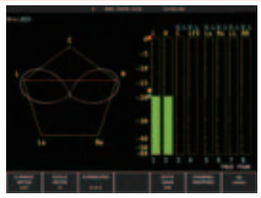
Hard Center Display

When the difference between the levels of the L and R channels is small and the channels are in phase, the LV 7800 computes and displays the phantom center between the two channels.

Phantom Center Display



When the L and R channels are out of phase, line segment LR is red. Because the channels are out of phase, there is no phantom center.

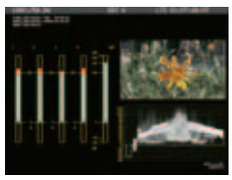


When input is received for the L, R, C, Ls, and Rs channels, an independent hard center is displayed.

Overview of the 5 Bar Display

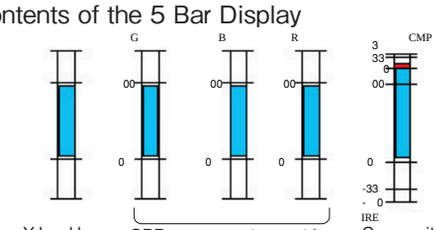
5 Bar Display Enables the Simultaneous Observation of Digital Broadcasts and Composite Levels

In the 5 bar display, video signal peak levels can be displayed instead of vectors. Five different bars are used to simultaneously display five different levels: luminance (Y), green (G), blue (B), red (R), and composite (COMP). The 5 bar display functions as a mode of the vector display. It is viewable as an alternate display under the vectorscope menu.
The G, B, R, and COMP bars are converted from the SDI Y, C_B, and C_R signals using matrix calculation.

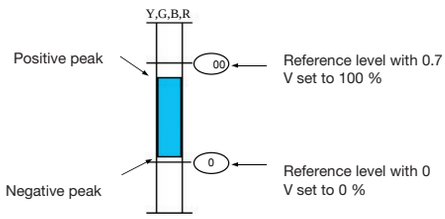


Bar Display Details

●Contents of the 5 Bar Display

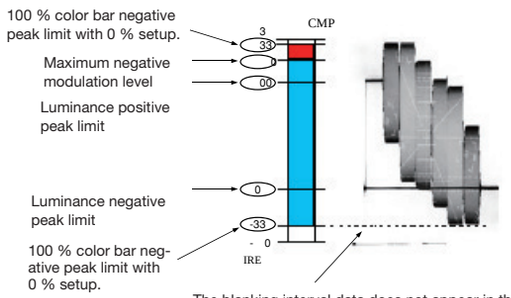


●Contents of the Component Bar Display



Indicates the range between the negative and positive peak levels

●Contents of the Composite Bar Display



Indicates the range between the positive and negative peak levels of Y + C (luminance + chrominance) in the SDI signal after it has been converted to a composite signal.

The blanking interval data does not appear in the bar levels.

Overview of the SDI-EXT REF Phase Difference Display

SDI-EXT REF Phase Difference Display

●Overview
The SDI-EXT REF phase difference display shows the phase differences between an SDI signal and an external sync signal (EXT REF).

●Features
Graphic and Numeric Displays of SDI and External Sync Signal (EXT REF) Phase Differences
Traditionally, the most common SDI phase adjustment method was to determine the phase difference by switching between an internal and external sync signal and observing the waveform shift. However, you can view phase differences and adjust phases more easily by using the SDI-EXT REF phase difference display.

Relative SDI Signal Phase Differences Are Displayable
By setting a particular SDI-EXT REF phase difference to zero, you can display relative SDI signal phase differences.

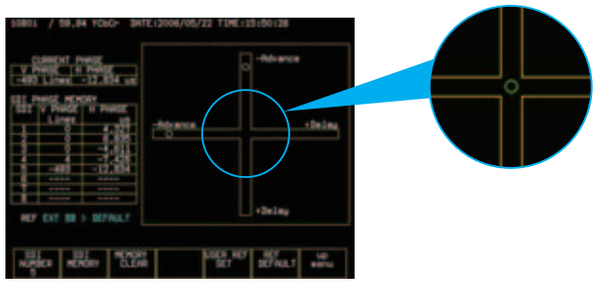
Store Up to Eight Different Phase Differences
You can store up to eight different phase differences. This allows you to store up to eight different switcher SDI signal phases.

SDI-EXT REF Phase Difference Display

●A feature that shows the phase differences between SDI and external sync (EXT REF) signals.

Numeric Display
The current phase differences between the applied SDI and EXT REF signals are indicated numerically under CURRENT PHASE.

Phase Difference Log
You can store up to eight sets of measured values. This is useful in cases such as when you use a device such as a switcher to change inputs and match phases.



Graphic Center
The V marker turns from white to green when it is in the center. The H marker turns from white to green when it is within ±3 clocks of the center.

●You can readily determine the phase difference between an SDI and external sync (EXT REF) signal through graphic and numeric phase difference representations. You can also determine the phase differences between different SDI signals by setting the difference for one signal to zero.

●You can record up to eight phase differences. You can quickly determine the phase differences between multiple inputs.

New Measurement Method

LEADER

CINELITE II LEADER ELECTRONICS Brings You a New Way of Monitoring Waveforms

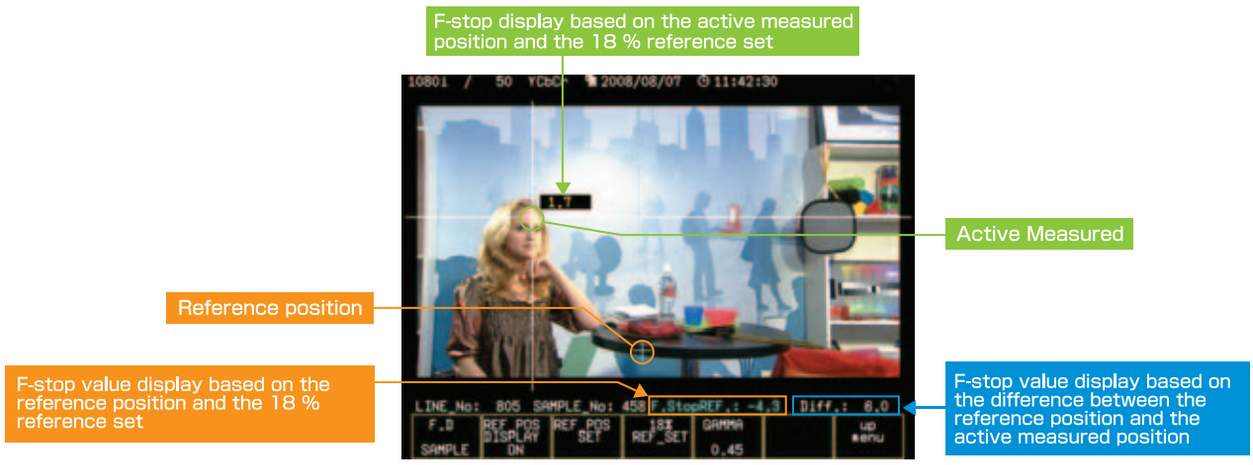
Patent pending

CINELITE

A feature that allows you to put the cross bars on any location of the picture display and view the luminance, RGB levels, and relative exposure at that point.

■ F-Stop Display Mode (relative exposure)

You can easily and accurately measure exposure values directly from the camera signal. This feature is fundamentally different from conventional spot measurement. It is especially useful for making lighting arrangements when filming.



■ RGB 255 Display

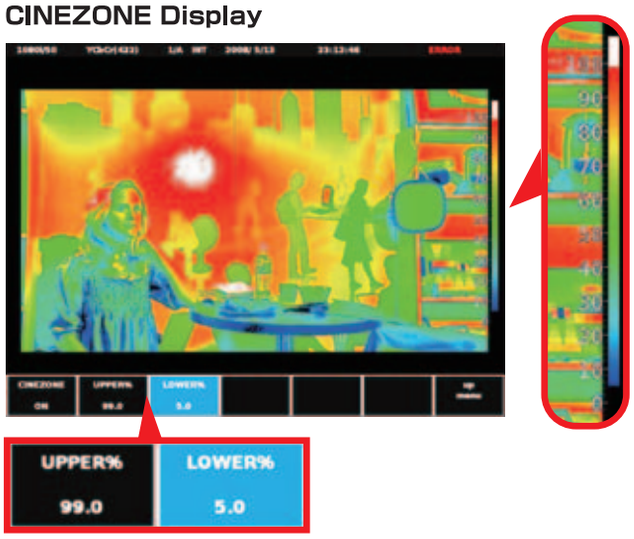
■ RGB % Display Mode

■ LUMINANCE % Display Mode

CINEZONE

You can achieve a flawless picture when filming. This feature is especially useful for making lighting arrangements. You can easily and accurately confirm dark areas with approximately 5 % luminance, areas with approximately 45 % of the luminance of the film subject, and bright areas with luminances of 80 % or more.

■ CINEZONE Display



■ Normal Display

CINE SEARCH

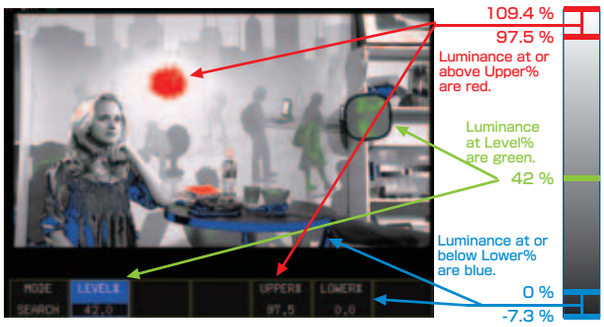
Displays a specified luminance level ±0.5 % using green on an otherwise monochrome picture display.

■Luminance Search Feature

Searching for luminance levels is incredibly easy.

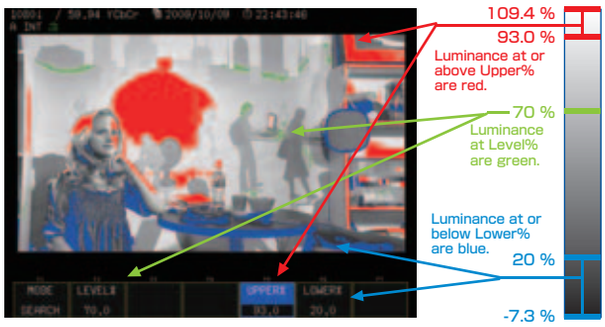
■Luminance Search Feature (1)

You can adjust each of the three luminance levels.



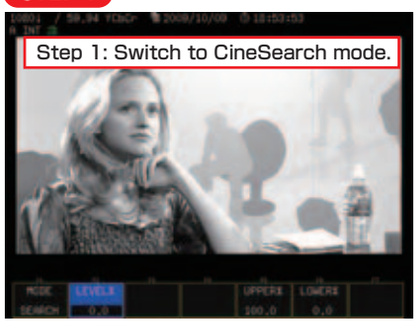
■Luminance Search Feature (2)

You can adjust each of the three luminance levels.

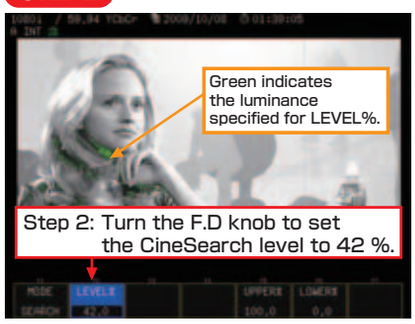


■Adjusting the Luminance Level during Filming

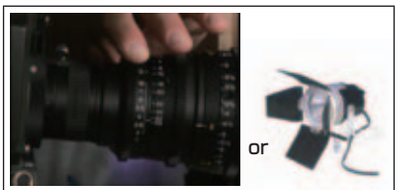
STEP 1



STEP 2



STEP 3

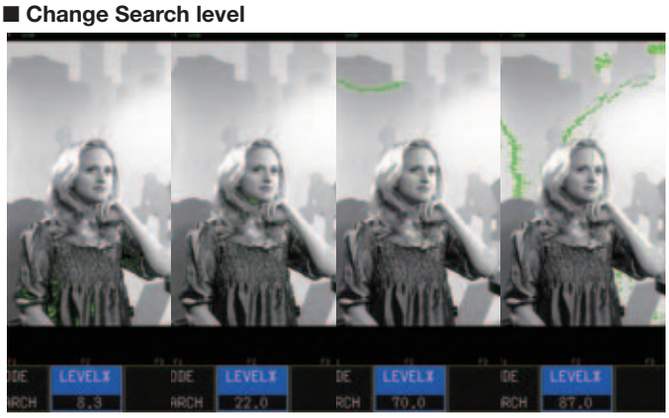


Step 3: Adjust the camera iris or lighting so that green appears on the face in the luminance search.

STEP 4

In this manner, you can use CineSearch to easily adjust the luminance. This would not be possible on a picture or waveform monitor.

■ Change Search level



MULTI SDI MONITOR

LV 5380

LEADER

3D Anaglyph

HD-SDI

SD-SDI

Dual Link 2K

8.4 Inches

4U size

CE
Upon request

CINELITE II option

Multi SDI Monitor

The LV 5380 is a multi-SDI monitor equipped with a precision video signal waveform and vectorscope display via a high-fidelity TFT LCD that produces high-quality picture displays. It also offers an embedded audio signal display featuring Lissajous and level-meter configurations. Additional features include simultaneous display of two SDI signals, screen capture to USB memory, and on-picture gamut error monitoring.
All these features are integrated into a thin, light instrument that allows it to be used in any video production or monitoring application.

FEATURES

- **Two Serial Digital Inputs and Output**
  The LV 5380 is equipped with two SDI inputs. You can use these inputs to receive two separate SDI signals or to receive a single dual link SDI signal.
  The LV 5380 is also equipped with a connector for transmitting a reclocked channel A or B signal. When you choose to receive an SDI signal through channel A or B by pressing the INPUT key, the output connector transmits the selected signal.
- **High-Quality TFT LCD**
  Employs an XGA TFT LCD (1,024x768) that produces high-quality picture displays.
- **Extensive Video Signal Displays**
  The waveform monitor display has gain adjustment, sweep, and cursor measurement features along with RGB and pseudo-composite information. The LV 5380 also provides vectorscope and embedded audio, Lissajous and Level meter displays.
- **Multi-Functional Picture Display**
  The picture display has various adjustment features such as color temperature selection, brightness, contrast, gain, and bias. Other features include monochrome, chroma up, on, image gamut error, and safety marker displays.
- **Multi-Screen Display and 2-Channel Simultaneous Display**
  1) You can switch to multi-screen which simultaneously shows video signal waveforms and pictures.
  2) You can switch to multi-screen which simultaneously shows video signal waveforms, picture, vectorscope, and audio levels.
  3) You can display two SDI signals simultaneously.
- **Dual Link Input**
- **Aperture Adjustment**
  You can enhance the outlines in a picture to assist in the focusing of the camera. You can choose from 100 different aperture levels.
- **Screen Capture**
  You can capture the display and store it as image data. You can view the captured data on the LV 5380 or store it in USB memory as a bitmap file that you can view on your PC.
- **Status Display**
  The LV 5380 can display SDI signal's data dump and error logs as well as the phase difference between the external sync signal and SDI signal.
- **Time Code Display**
  You can display LTC or VITC time codes.
- **ID Display**
  You can assign IDs to input channels. IDs are entered from the LV 5380 panel.
- **Display Mode Switch Keys**
  For quick operation, the LV 5380 provides dedicated keys for switching between different display modes such as video waveform, vectorscope, and picture displays. In addition, all keys can be back-lit.
- **Stereo Headphone Output**
  Delivers SDI signal's embedded audio signals in stereo through the headphone output jacks.
- **External Sync Signal Input**
  Accepts tri-level sync signals or NTSC/PAL black burst signals.
- **Presets**
  Stores up to 30 front panel presets.
- **Last Memory**
  Equipped with a feature that stores panel settings to memory.
- **75-mm VESA Mounting**
  Provides 75-mm VESA mounting holes on the rear panel that allows the LV 5380 to be mounted on an arm or stand. Tripod mounting facilities also provided.
- **Option**

FS 3035 : CINELITE II *1
CINELITE On-Picture Measurements, CINEZONE false color displays and peaking function facilitate quick camera focus and exposure setups.

OP72 : Remote & Tally*2

OP73 : BATTERY MOUNT IDX (V-Mount)*2 *3

OP74 : BATTERY MOUNT ANTON (AntonBauer)*2 *3

*1 CINELITE is a registered trademark of LEADER ELECTRONICS CORP. in the United States and/or the other countries.
*2 Factory option
*3 If you install the battery mount, you cannot use the 75-mm VESA mounting holes.

Video Formats and Corresponding Standards

Single Link System Video

Color System	Quantization	Format		Corresponding Standard
		Scanning	Frame (Field) Rates	
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M SMPTE 292M
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

Dual Link System Video

Color System	Quantization	Format		Corresponding Standard
		Scanning	Frame (Field) Rates	
RGB 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE 372M (1920x1080)
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
Y,C_B,C_R 4:2:2	10 bit	1080p	60/59.94/50	SMPTE 372M (1920x1080)
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
RGB 4:4:4 (2K)	12 bit	1080p	24/23.98	SMPTE 372M (2048x1080)
		1080PsF	24/23.98	

Audio Display	
Compliant Standard	SMPTE 299M (HD-SDI), SMPTE 272M (SD-SDI)
Quantization	24 bits
Input/Output Connectors	
SDI Input	
Input Connectors	2 BNC connectors
SDI Output	
Output Connector	1 BNC connector Reclocks and transmits the selected SDI input signal
External Reference Input*1	
Input Signal	Tri-level sync or NTSC/PAL black burst
Input Connectors	1 pair of BNC connectors
Input Impedance	15 kΩ passive loop-through
Headphone Output	
Output Signal	Extracts and transmits the embedded audio signal (any two channels) (synchronized to the video signal)
Output Connector	1 stereo miniature jack
Control Connector	
USB Port	
Specifications	USB 2.0
Media	Only supports USB memory devices.
LCD	
LCD Type	8.4-inch color XGA TFT. Effective area 1,024 x 768 dots
Backlight Brightness	32 adjustable levels
Auto Shutoff	Time to turn off the LCD can be set.
Screen Capture	
Description	Captures the screen
Waveform Comparison	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.
Data Output	Screen captures can be saved as bitmap files to USB memory, or they can be saved in a file format that the LV 5380 can load.
Data Input	Data saved to USB memory can be loaded and displayed on the LV 5380.
Presets Setting	
Number of Presets	30 total.
Waveform Display	
Waveform Operation	
Display Mode	Overlay and parade
Blanking Period	H and V blanking periods can be masked
RGB Conversion	Converts Y, C_B, C_R signals into RGB and displays the result
Pseudo-Composite Display	Digitally converts component signals into composite signals and displays the result
Vertical Axis	
Gain	1 or 5 selectable
Variable Gain	0.2 to 2.0
Amplitude Accuracy	≤ ±0.5 %
Horizontal Axis	
Line Display	1, 10, 20, ACTIVE, or BLANK selectable
Field Display	1, 20, or 40 selectable
Cursor Measurement	
Time Measurement	Measures in usec or msec
Frequency Display	Displays the frequency by assuming the interval between the cursors to be one period
Scale	
Type	%, Scale or V Scale selectable
Vectorscope Display	
Gain	1, 5, or IQ-MAG selectable
Variable Gain	0.2 to 2.0
Amplitude Accuracy	≤ ±0.5 %
Scale	
IQ Axis	Show or hide selectable
Display Colors	7 colors choose from
Pseudo-Composite Display	Artificially converts component signals into composite signals and displays the result
Thumbnail Display	Can display thumbnails of pictures display and audio level meters
5 Bar Display	
Bar Display	Displays the peak levels of Y, R, G, B, and composite
Scale	mV or % selectable
Error Level	Based on gamut error level and composite gamut error level settings, user settable.
Picture Display	
Color Temperature	6500K or 9300K selectable
Quality Adjustment	Brightness, contrast, gain, bias, aperture
Display Size	Fit, full frame, real, and 4:3 full screen
Color	R, G, or B can be turned off separately. Variable chroma gain and monochrome available.
Aspect Marker Display	4:3, 13:9, 14:9,16:9 or 2.39:1 selectable
Aspect Marker Format	Line, shadow (three types), black
Safety Marker Size	ARIB TR-B4, SMPTE RP-218, or user-defined selectable
Embedded Audio Display	
Lissajous Display	
Display Channels	2ch (single) or 8ch (multi) selectable
Display Mode	X-Y or L-R selectable
Level Meter Display	
Display Channels	2ch or 8ch display selectable
Meter	60 dB peak level, 90 dB peak level, or average selectable. (Peak level meters include setable peak hold indication.)
Channels	
Group Selection	Select any two groups within the same SDI channel from groups 1, 2, 3, and 4
Status Display	
Event Log	Stores up to 1,000 events
Data Dump Display	Dumps data by serial data sequence or by channel
Data Output	Can be saved in text format to USB memory
Error Detection	CRC Error, Gamut Error, Composite Gamut Error, BCH Error
Phase Difference Display	
Display	Displays numerically and graphically the phase difference between an SDI signal and the external sync signal
Display Range	
Vertical	±1 field (for interlace) ±1/2 frame (for progressive)
Horisontal	±1 line
Time Display	Current Time Display, Elapsed Time, Time Code
Other Display Features	
ID Display	ID can be assigned to each input channel.
Tally Indicator	One of the remote connectors can be modified so that tally indication can be shown on the screen (to be supported in the future).
Front Panel	
Key LEDs	All keys illuminate dimly. (The selected key illuminates brightly.)
Last Memory	Backs up panel settings to memory
Environmental Conditions	
Operating Temperature	0 to 40 °C
Operating Humidity Range	≤ 85 % RH (without condensation)
Power Requirements	10 to 18 VDC, 30 W max.
Dimensions	215 (W) x 176 (H) x 85 (D) mm (excluding projections) 8 1/2 (W) x 6 7/8 (H) x 3 3/8 (D) inch
Weight	2.0 kg 4.4 lbs.
Accessories	Instruction manual .....1 Ferrite core .....1 VESA spacer 1
Option Sold Separately	AC adapter SPU40-105, Rack mount LR 2751 I Blank panel LC 2129 Tripod mounting plate LC 2127 Handle LH 2140

*1
- The video signal waveform display and vectorscope display may be delayed by up to 1 frame with respect to the picture display.
- V sweep cannot be displayed when the video signal waveform displays for two simultaneous inputs are shown.
- Phase difference accuracy between external reference and internal signal is ±1 clock cycle.

LV 5380 DISPLAY

LEADER

3D Anaglyph Display

You can check 3D images in the anaglyph display.

Anaglyph

Convergence

In this layout, the left and right images are displayed together, and the waveforms of the left and right signals are displayed side by side. The picture in which the left and right images are displayed together is an anaglyph display, and you can check 3D images by looking at the display while wearing red and cyan 3D glasses.

Picture Display

Versatile Picture Display

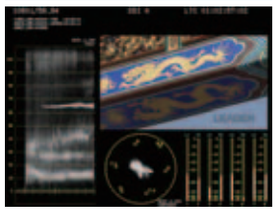
Picture adjustment options include color temperature (6500K/9300K), brightness, contrast, gain, bias, and aperture. You can switch the R, G, and B signals on and off.

Picture adjustment menu

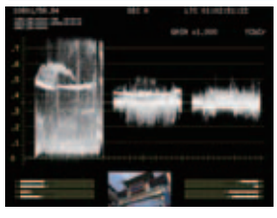
Picture and waveform time axis correspondence

FIT Display Size (with audio levels)

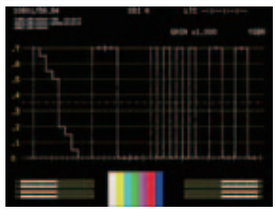
Multi-Screen Display



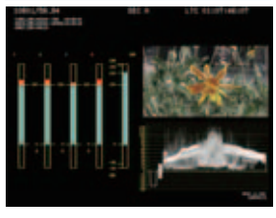
Waveforms



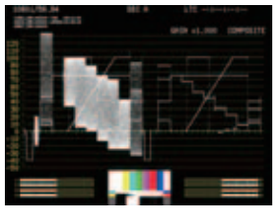
Y RGB Display



5 Bar/Picture/Gamut

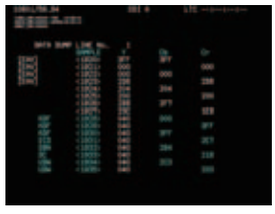


Composite Display

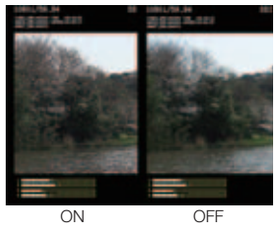


Phase Difference Display

Data Dump



Aperture



ON OFF

■LV 5380 REAR PANEL

■Rack Mounting

LR 2751 I Rack Mount (sold separately; tiltable)
LC 2129 Blank Panel (sold separately)

■Camera Mounting

MULTI SDI MONITOR

LV 5330

LEADER

HD-SDI

SD-SDI

Dual Link 2K
1920x1080 only

6.5 Inches

1.4 kg

CE
Upon request

CINELITE II
INSIDE

Multi SDI Monitor

The LV 5330 is a compact and lightweight multi-SDI test monitor specifically designed for on, camera and portable applications. Picture, waveform, vector, audio and status screens can be displayed individually or in multi-screen representations. The instrument is also equipped with on-picture measurement functions, Cinelite and Cinezone, and helps facilitate measurements that are easily understood by both technical and operations personnel. High-accuracy measurement and monitoring facilities also include settable error level monitoring and alarms as well as extensive data analysis. A screen capture function facilitates communication between production and post production personnel and aids in project documentation.

FEATURES

- **Two Serial Digital Inputs and Output**
  Two SDI input connectors (channels A and B) support HD-SDI and SD-SDI signals. The selected SDI input is passed through an SDI output connector to facilitate switched monitor output operation.
- **Display**
  A built-in 6.5-inch XGA TFT LCD (1,024x768) provides brilliant and clear representations of waveforms, vectors, pictures, audio level meters, status, etc. The multi-screen feature allows these displays to be shown simultaneously in tiled windows.
- **Picture display**
  Brightness, contrast, and saturation is adjustable and aspect ratio, safe action and safe title markers can be displayed. The edge enhancement feature provides visual assistance with focus.
- **Cinelite II (Cinelite and Cinezone)**
  The Cinelite on-picture measurement feature displays the luminance of any three user definable points and provides luminance measurements in %, RGB levels (or %) as well as in f-stops. The Cinezone feature uses false-colors to represent luminance values on the display enabling quick confirmation of the luminance distribution levels on the display.
- **Waveform Monitoring**
  Parade, overlay, Y CB CR, RGB, and pseudo-composite displays are available.
- **Vectorscope**
  Vectorscope display is available and accommodates both 75 % and 100 % saturation levels; pseudo-composite vectorscope display is also available.
- **5 Bar Display**
  The 5 Bar display enables simultaneous monitoring of component and composite gamut.
- **Line Selector**
  Selects any line of the video signal to be displayed and provides waveform, vector and 5-bar representations of the selected line. A line marker on the picture facilitates visual selection of the appropriate line.
- **Audio Level Meter**
  Up to 8 channels of embedded audio signals can be displayed using audio bar level meters.
  *The SD-SDI audio quantization precision is up to 20 bits.
- **Viewfinder**
  The camera's composite video output (in NTSC or PAL) can be shown on the picture display. The edge enhancement feature assists you in focusing the camera.
- **Screen Capture**
  The displayed screen can be captured and saved to internal memory or USB memory.
- **Extensive Analysis Features**
  · Various types of error detection
  · SDI signal event log
  · Digital data dump
- **Flexible Control**
  · Instrument can be remote controlled from a PC over an Ethernet network.
  · Internal memory holds up to 30 presets allowing quick access to your favorite instrument setups. Personalize your LV 5330 by loading your own custom presets via USB thumb-drive.
- **External Synchronization**
  Accepts tri-level sync or NTSC/PAL black burst signals.
- **Stereo Headphone Output**
  Extracts embedded audio signals and sends 2 user selectable audio channels to the headphone jack.
- **Panel LED Illumination**
  You can illuminate all of the panel keys; a useful feature when working in a dark environment.
- **Power Supply**
  XLR DC input connector is provided; accepts 12Vdc- 18Vdc.
  A V-mount battery adapter is also available as a factory option.
- **Tripod Mounting**
  A screw(1/4 in.) hole for attaching a camera tripod is provided on the bottom panel of the LV 5330

Battery Mount (Factory Option)

A battery adapter can be installed on the rear panel as a factory option.
- BATTERY MOUNT IDX (V-Mount)
- BATTERY MOUNT ANTON (AntonBauer)

LV 5330SER01 HISTOGRAM & USER GAMMA DISPLAY (Option)

This software option enables you to show video signals on the LV 5330 histogram display. It also enables you to convert the user-defined gamma to ITU-R BT709 gamma and show the converted signal on the LV 5330 picture display.

LV 5330SER02 GAMUT & LEVEL ERROR(Option)

This GAMUT & LEVEL ERROR option adds the following features to the LV 5330
· Area and time specification in gamut error detection
· Detection of luminance and chrominance signal level errors

Video Formats and Corresponding Standards

Single Link System Video

Color System	Quantization	Format		Corresponding Standard
		Scanning	Frame (Field) Rates	
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M
		1080p	30/29.97/25/24/23.98	SMPTE 292M
		1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

Dual Link System Video

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

Other Standards	
Ancillary Data Standard	SMPTE 291M
Embedded Audio Standard	SMPTE 299M (HD-SDI), SMPTE 272M (SD-SDI)
Format Setting	
Format Setting	Auto or manual setting from the supported formats
Sampling Frequency	74.25 MHz (HDTV), 74.25/1.001 MHz (HDTV), 13.5 MHz (SDTV)
External Synchronization	Auto setting from supported formats
Input/Output Connectors	
SDI Input	
Input Connector	2 BNC connectors (switching between A and B)
External Reference Input	
Input Signal	Tri-level sync or NTSC/PAL black burst
Input Connector	1 pair of BNC connectors (15 kΩ passive loop-through) *Phase difference accurary between external reference and internal signal is ±1 clock cycle.
SDI Output	
Output Connector	1 BNC connector (reclocks and transmits the selected SDI input signal)
Headphone Output	
Output Signal	Extracts and outputs the embedded audio signal.
Sampling Frequency	Supports 48 kHz (must be synchronized to the video signal)
Output Connector	1 stereo miniature jack, 32 Ω (16 to 600 Ω)
USB Memory	
Function	Stores screen captures, error logs, preset data, and data dumps, Also used for Firmware update.
Remote Control	
Function	Recalls presets, transmits errors, controls the tally indicator
Connector	D-sub 15-pin female
Ethernet	
Function	Enables remote control from an external computer and data transmission
Type	10BASE-T/100BASE-TX auto switching, one RJ-45 jack
Viewfinder Input	
Function	Monitors composite video signals, picture only.
Input Signal	NTSC/PAL VBS signal
Input Connector	1 BNC connector
Picture Display	
HDTV Display	Displays by sampling pixels
SDTV Display	Displays by interpolating pixels
Display	Color or black and white selectable
Marker Display	Center marker, aspect marker, safe title marker, safe action marker
Color Temperature	3200 K, 6500 K, 9300 K or THROUGH
Cinelite Display	
f-STOP	Measures relative brightness in f-stops
Measurement points	Three points specified using the cursor
Reference	Uses an object with an 18 % reflectance as reference
%DISPLAY	Displays luminance percentage (LEVEL%), RGB percentage (RGB%), and RGB numeric values
Measurement points	Three points specified using the cursor
Measurement areas	1x1, 3x3, 9x9
GAMMA	
0.45	Reference gamma
USER 1-3	User-defined gamma
USER A-E	Gamma downloaded from USB memory
On Picture Level Indicator	Switches the screen to black and white and displays the set luminance level in green
Cinezone Display	
Screen	Maps colors based on luminance levels. Linear or step selectable.
UPPER	Can be set from -6.3 % to 109.4 %. Displays white when the level is above the set level.
LOWER	Can be set from -7.3 % to 108.4 %. Displays Black when the level is below the set level.
Display Form	
Display Size	6.5-inch color XGA. Effective area 1024 x 768 dots
1 Screen Display	Picture display, Cinelite display, Cinezone display, waveform display, vectorscope display, status display, viewfinder display
2 Screen Display	Picture and waveform displays, waveform and vectorscope displays, waveform and picture displays, waveform and audio level displays, audio numeric and bar displays
4 Screen Display	Audio level display or status display selectable in addition to waveform display, vectorscope display, and picture display
Waveform Display	
Waveform Operation	
Display Modes	Overlay and parade
Timing Display	Displays by calculating Y-C_B and Y-C_R Uses bowtie signals (authorized by Tektronix, Inc.)
EAV-SAV period	Show or hide selectable
GBR Conversion	Converts Y, C_B, C_R signals into G, B, R and displays the result
Pseudo-Composite Display	Digitally converts component signals into composite signals and displays the result
Vertical Axis	
Gain	x1, x5, or variable selectable
Variable Gain	x0.2 to x2.0 at the x1 setting, x1.0 to x10.0 at the x5 setting
Amplitude Accuracy	≤ ±0.5 %
Horizontal Axis	
Line Magnification	x1, x10, x20, ACTIVE, or BLANK
Field Magnification	x1, x20, or x40 selectable
Cursor Measurement	
Amplitude Measurement	%, mV, R%, 3FF or 1023
Time Measurement	Measures in usec or msec
Frequency Display	Displays the frequency by assuming the interval between the cursors to be one period
Vectorscope Display	
Gain	x1, x5, IQ-MAG, or variable selectable
Variable Gain	x0.2 to x2.0
Amplitude Accuracy	≤ ±0.5 %
IQ Axis	Show or hide selectable
Display Colors	7 colors to choose from
Pseudo-Composite Display	Digitally converts component signals into composite signals and displays the result
5 Bar Display	
Bar Display	Displays the peak levels of Y, R, G, B, and composite
Phase Difference Display	
Display	Displays the phase difference between an SDI signal and the external sync signal both numerically and graphically
Embedded Audio Display	
Display Channels	8-channel simultaneous display
Meter	60 dB peak level or 90 dB peak level
Group Selection	Select any two groups from groups 1, 2, 3, and 4
Channel Mapping	Mapping to L, R, SL(S), SR, C, LFE, RL, RR
Viewfinder	
Display Size	Full-screen display
Status	
Data Dump Display	Dumps data by serial data sequence or by channel
Event log	Stores up to 1,000 events
Data output	To USB memory or over an Ethernet network
Error Detection	CRC Error, EDH Error, Gamut Error, Composite Gamut Error, BCH Errors
Screen Capture	Captures the displayed screen
Waveform Comparison	Superimposes the input signal over an image from memory.
Data Output	Screen captures can be saved as bitmap files to USB memory or to a PC over the Ethernet.
Data Input	Data Saved to USB memory can be loaded and displayed on the LV 5330
Presets	30
Other Display Features	
LCD	6.5-inch color LCD
Backlight brightness	High or low selectable
Screen Display	Format, color system, date, time
Panel LED Illumination	Illuminates all keys
Environmental Conditions	
Operating Temperature	0 to 40 ºC
Operating Humidity Range	≤ 85 %RH (no condensation)
Operating Environment	Indoors, or outdoors with no rain
Overvoltage Category	I
Pollution Degree	2
Power Requirements	12 VDC (10 to 18 V), 18 Wmax.
Dimensions and Weight	215 (W) x128 (H) x 63 (D) mm (excluding projections), 1.4 kg 8 1/2 (W) x 5 3/64 (H) x 2 31/64(D) Inch, 2.9 lbs.
Accessories	Instruction manual .....1 15-pin D-sub connector .....1 15-pin D-sub connector .....1 VESA spacer .....1 Ferrite core 1
Option Sold Separately	AC adapter SPU40-105 Rackmount Adapter LR 2752 Blank Panel LC 2130 Tripod Mounting Plate LC 2127

■OPTION

LV 5330SER01 HISTOGRAM & USER GAMMA DISPLAY (Option)

This software option enables you to show video signals on the LV 5330 histogram display. It also enables you to convert the user-defined gamma to ITU-R BT709 gamma and show the converted signal on the LV 5330 picture display.

Histogram Display	
Display Modes	
YGBR, YRGB	YGBR, YRGB, Y1023
Y1023	8-bit data processing 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 5330
Contents	License key.....1 Instruction manual.....1

LV 5330SER02 GAMUT & LEVEL ERROR(Option)

This GAMUT & LEVEL ERROR option adds the following features to the LV 5330
· Area and time specification in gamut error detection
· Detection of luminance and chrominance signal level errors

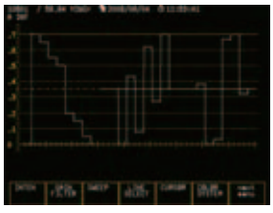
Gamut Error	
Error Detection	Detect by specifying area and time
Area Specification	0.0 to 5.0 % (specifying 0.0 % is equivalent to not specifying an area)
Time Specification	1 to 50 consecutive frames
Level Error	
Error Detection	Level errors in the luminance and chrominance signals are detected (not 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 5330
Contents	License key.....1 Instruction manual.....1

■LV 5330 DISPLAY

Cinelite

Cinezone

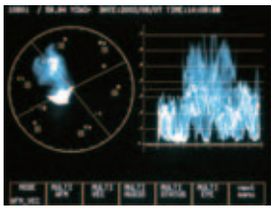
Waveforms



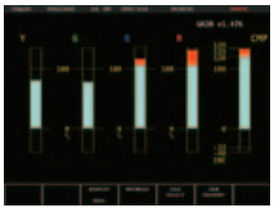
Vector

Audio Display

Multi-Screen Display

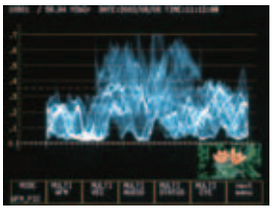


5 Bar/Gamut



Picture/Waveform

Waveform/Picture



Phase Difference Display

■LV 5330 REAR PANEL

■Camera Mounting

■Rack Mounting

LR 2752
LV 5330 dual mount example

MULTI MONITOR

LV 5800

LEADER

3G option
HD-SDI option
SD-SDI option
Dual Link 2K option
5 Bar option
CINELITE II option

CE
Upon request

Please use exclusive cabinet for Model LV 5800 (photograph shows LR 2427B)
The Panel design is subject to change. The cabinet is sold separately.

PATENTED:
Equivalent cable length measurement

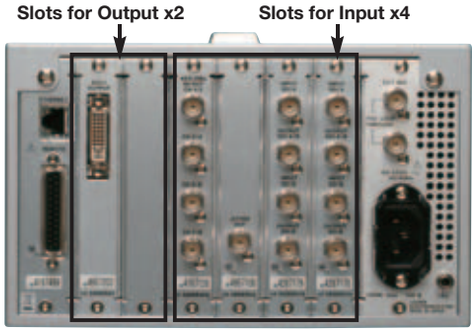
Multi Monitor

The LV 5800 is a new type of multi monitor that allows you freely configure various input and output units according to your application.
You can construct a versatile system by combining dedicated input and output units.
In particular, simultaneous display and error monitoring of multiple SDI inputs are possible, and 4-waveform parade display on the waveform monitor is also supported.

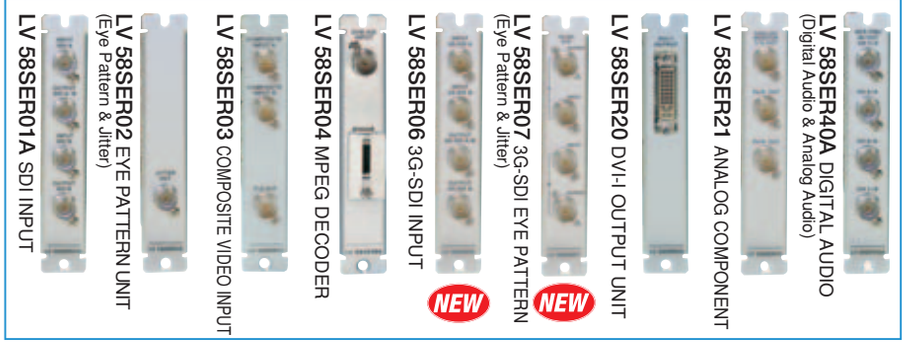
FEATURES

- **4 Input Slots**
  Up to 4 input units can be inserted. Each input unit operates independently.
- **2 Output Slots**
  Up to 2 output units can be inserted. Each output unit operates independently.
- **Display Function**
  Employs a color TFT LCD monitor with XGA resolution (1,024 x 768).
  The display function of each unit can be displayed on a full screen or 4 screen multi display.
  The 4 screen display allows arbitrary combination of signals of different input units to be displayed.
- **Capture Function**
  The unit csn store one frame of serial digital data in SD or HD format to the internal memory. The data can also be saved to external USB memory in frame format or as .DPX or .TIF files.
- **Ethernet Connector**
  Remote control through TELNET or FTP, error monitoring, and file transfer are possible by connecting a PC to the Ethernet connector on the rear panel.
- **Remote Connector**
  The remote connector on the rear panel allows recalling of presets, detection of errors, and switching of inputs.
- **Low Noise Cooling System**
  Equipped with a low noise fan. Fan speed controlled using a temperature sensor. If the fan stops due to a malfunction, an alarm can be displayed on the screen through the revolution sensor.
- **Headphone Socket**
  Sound can be monitored when the LV 58SER40A is installed.

■ **LV 58SER20/LV 58SER40A/ LV 58SER02/LV 58SER01A×2 for installation example**



Optional Unit



LV 5800 SPECIFICATIONS

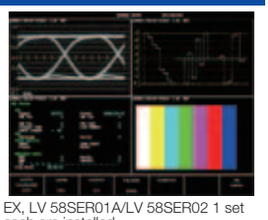
LEADER

Slot	
Number of Slots for Input	4
Number of Slots for Output	2
LCD Display	
LCD Screen Type	6.3-inch TFT color
Display Format	XGA Effective area 1024 x 768 dots
Clock Frequency	64.93 MHz (The input signal and the display clock signal have not been synchronized.)
Frame Frequency	59.94 MHz (The input signal and the display clock signal have not been synchronized.)
Backlight Brightness	Selects HIGH or LOW
Auto Shutoff	Sets the time for the backlight to shutoff automatically.
Display Screen	1-screen display, 2-screen display, 4-screen display
Screen Capture	
Capture	Image capture by the still picture of the display screen
Waveform Comparison	Superimposes the input signal over an image from memory.
Media	Internal memory (RAM) or a USB memory
Format	Records 1 screen in the internal memory. TIF, DPX
Data Output	Save displayed test screens or full-frame captures in various formats, including BMP, DPX, and TIFF. Save data to a PC via a USB memory or Ethernet network.
Presets	
Number of Presets	60
Media	Internal memory (RAM) or a USB memory
Recall Method	Through the front panel, remote connector, and Ethernet network (Switches 8 points and 60 points for recalling through the remote connector.)
Copy	Copies presets collectively to the USB memory or from the USB memory to the LV 5800.
External Reference Input	
Input Signal	Tri-level sync signal or NTSC/PAL black burst
Input Connector	BNC connector 1 system 2 connectors
Input Impedance	15 kΩ Passive Loop-through
Input Return Loss	≥30 dB
Maximum Input Voltage	±5 V (DC + peak AC)
External Control Connector	
USB Connector	
Specifications	USB2.0
Function	Only a large capacity memory device is supported.
Ethernet Connector	
Corresponding Standard	IEEE802.3
Input/Output Connector	RJ-45
Function	Remote control from an external computer and monitoring of errors, etc.
Type	10BASE-T/100BASE-TX
Remote Connector	
Function	Recalling of presets, monitoring of errors
Control Signal	LV-TTL level (LOW active)
Control Connector	25-pin D-sub (female)
Headphone Output	
PHONES connector	Miniature jack (stereo)
Function	Like LV 58SER40A (DIGITAL AUDIO), it is effective when the unit that has audio decoding function is inserted.
Environmental Conditions	
Operating Temperature	0 to 40 °C
Operating Humidity	≤ 85 % RH(without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2,000 m
Overvoltage Category	II
Pollution Degree	2
Power Requirements	90 to 250 VAC 50 Hz/60 Hz, 150 Wmax.
Dimensions and Weight	215(W) x 133(H) x 449(D) mm 5 kg 8 1/2(W) x 5 1/4(H) x 17 11/16(D) inch 11 lbs.
Accessories	Power cord.....1 Cover/Inlet stopper.....1 Screws for rack mounting (inch specification).....2 Instruction manual.....1 25-pin D-sub connector.....1 25-pin D-sub connector cover.....1
Option Sold Separately	
Cabinet	LR 2427B (with handle) LR 2404A (without handle)
Rackmount adapter	LR 2700A-I (19-inch EIA rack)
Remote Controller	LV 7800-01

Multi-Screen

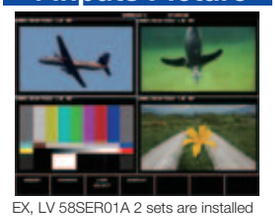
EX, LV 58SER01A 2, LV58SER02 1 set are installed

EX, LV 58SER01A 2 sets are installed



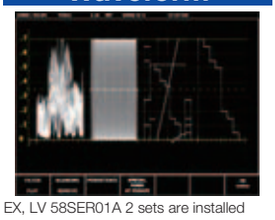
EX, LV 58SER01A/LV 58SER02 1 set each are installed

4 inputs Picture



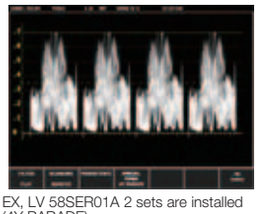
EX, LV 58SER01A 2 sets are installed

Waveform

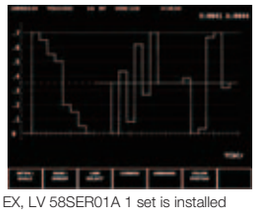


EX, LV 58SER01A 2 sets are installed

Waveforms



EX, LV 58SER01A 2 sets are installed (4Y PARADE)



EX, LV 58SER01A 1 set is installed

Vector

EX, LV 58SER01A 2 sets are installed

Anc Date Viewer

EX, LV 58SER01A 1 set is installed

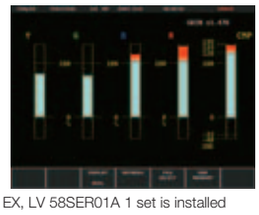
Phase

EX, LV 58SER01A 1 set is installed

V-ANC

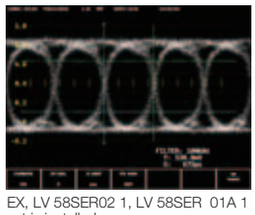
EX, LV 58SER01A 1 set is installed

5 Bar

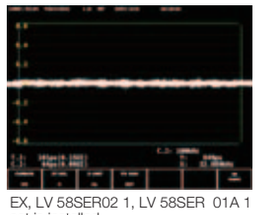


EX, LV 58SER01A 1 set is installed

EyePattern/Jitter

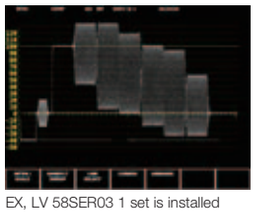


EX, LV 58SER02 1, LV 58SER 01A 1 set is installed



EX, LV 58SER02 1, LV 58SER 01A 1 set is installed

Pseudo Composite



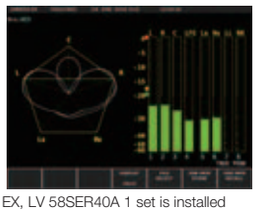
EX, LV 58SER03 1 set is installed

MPEG

EX, LV 58SER04 1 set is installed

Audio

EX, LV 58SER40A 1 set is installed

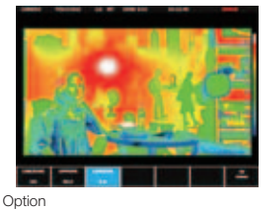


EX, LV 58SER40A 1 set is installed

Cinelite

Option

Cinezone



Option

LV 58SER01A SDI INPUT (HD-SDI, SD-SDI, HD-SDI DUAL)

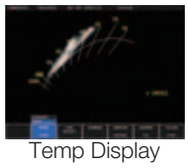
Plug-In Unit

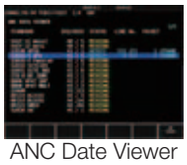
HD-SDI
SD-SDI
Dual Link 2K
AFD

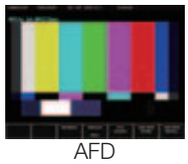
CINELITE II option

This SDI input unit can be installed into to the input slot of an LV 5800 (multi monitor) or into an LV 7800 (multi rasterizar). You can install a maximum of four LV 58SER01A units into these instruments. By operating the instrument, you can display SDI signals' video signal waveforms, vector waveforms, pictures, error detection results, and so on.


CIE Chart


Temp Display


ANC Date Viewer


AFD

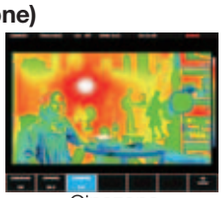
FEATURES

- **2-Channel Serial Digital I/O**
  An SDI input unit contains 2 channels of SDI input connectors. The two connectors can also function as a dual link input of a single channel. SDI output that is reclocked using a serial signal is provided for each input. In addition, the SDI signal that is inputted to the ACH or the BCH can be outputted respectively from the ACH/BCH Reclockout output connector by interlocking with the input key of the front panel.
- **Video Signal Display Function**
  In addition to displaying the video waveforms, vectors, and pictures of the SDI signal on a full screen, 2- and 4-screen multi display can be shown. The multi display allows arbitrary combination of a single or multiple input signals to be displayed.
  (Multi display in which link A and link B are separated during dual link operation is not allowed.)
- **Error Detection Function**
  Detects various errors related to the SDI, embedded audio, and ancillary data including CRC errors and EDH errors.
- **Ancillary Data Analysis**
  Supports various types of ancillary data for analysis display. In particular.
- **5 BAR DISPLAY**
  The 5 BAR display allows simultaneous monitoring of component and composite gamut.
- **SDI-EXT REF Phase Difference Display Function**
  The SDI-EXT REF phase difference display function shows the phase difference between the SDI signal and the external sync signal (EXT REF).
- **Simultaneous Monitoring of Component and Composite Gamut Using the 5 Bar Displays**
- **Closed Caption Display Function**
- **Embedded Audio Demultiplex Function**
  The unit is equipped with a function for demultiplexing the embedded audio signal.
  Level meter and Lissajous displays can be achieved when used in combination with the digital audio unit (LV 58SER40A). The signal can also be output as AES/EBU.
- **Dual link input**
- **AFD Display**
- **CIE 1931 XY Chromaticity Diagram Display**
  The CIE1931 XY Chromaticity Display (CIE chart) provides a X-Y vector display allowing for the evaluation and analysis of color in the XYZ coordinate system. Chromaticity markers, Planckian locus curve with color temperature and cursors are also provided.

■OPTION

- **FS 3033 Cinelite II (Cinelite and Cinezone)**
  CINELITE On-Picture Measurements, CINEZONE false color displays and peaking function facilitate quick camera foucus and exposure setups.


Cinelite


Cinezone

LV 58SER01A SDI INPUT SPECIFICATIONS

Video Formats and Corresponding Standards
Single Link System Video

Format	Quantization	Scanning	Frame (Field) Rates	Corresponding Supported
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M SMPTE 292M
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

Dual Link System Video

Format	Quantization	Scanning	Frame (Field) Rates	Corresponding Supported
RGB 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE 372M (1920x1080)
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		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	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
GBR 4:4:4 (2K)	12 bit	1080p	24/23.98	(2048x1080)
		1080PsF	24/23.98	

Ancillary data standard	SMPTE 291M
Embedded audio standard	HD-SDI: SMPTE 299M SD-SDI: SMPTE 272M
Input/Output Connector	
SDI Input	
Input Connector	BNC connector 2 connectors For single link A ch / B ch 2 systems For dual link link A / link B 1 system
Maximum Input Voltage	±2 V (DC + peak AC)
External Sync Signal Input	
Input Signal	Tri-level sync or NTSC/PAL black burst
Input Connector	BNC connector 1 system 2 connectors
SDI Output	
Output Connector	BNC connector 2 connectors Reclocks serially and outputs the input signal.
During single link	A ch/B ch switchable 1 system B ch fixed 1 system
During dual link	link A / link B 1 system
Output Impedance	75 Ω
Output Voltage	800 mVp-p ±10 %
Output Return Loss	15 dB or more (5 MHz to serial clock frequency)
Waveform Display	
Waveform Operation	
Display Mode	
Overlay display	Displays component signals overlaid
Parade display	Displays component signals side by side
Gain Adjustment	x1 / x5 / variable
Blanking Period	Show / hide selectable
YC_BC_R→GBR conversion	Converts YC_BC_R signals into GBR and displays the result.
Pseudo-Composite Display	Digitally converts component signals into composite signals and displays the result.
Timing Display	Displays by calculating Y-C_B and Y-C_R Uses bowtie signals
Line Select	Displays the selected line
Image Quality Adjustment	Brightness adjustment
Vertical axis	
Sensitivity	V scale 0 V to 0.7 V, -0.3 V to 0.7 V % scale 0 % to 100 %, -50 % to 100 %
Gain	x1, x5, and variable
Variable Gain	x0.2 to x2.0
Amplitude Accuracy	±0.5 %
Horizontal Axis	
Line Display	
Display Format	Overlay: 1H, 2H Parade: 1H, 2H, 3H Timing: Y-C_B,Y-C_R 4Y Parade*1: 4H *1 As for 4Y parade mode, two LV 58SER01A (SDI INPUT unit) should be inserted, and four inputs need to synchronize in the same format each other together.
Magnification	x1, x10, x20
Cursor Measurement	
Configuration	Horizontal cursors: 2 cursors (REF and DELTA) Vertical cursors: 2 cursors (REF and DELTA)
Amplitude Measurement	Measured in [%] and [V]
Time Measurement	Displayed in [usec] or [msec]
Frequency Display	Displays the frequency in which the time between

	cursors is considered a cycle.
Vectorscope Display	
Scale	Selects 75 % or 100 % (Using a color bar)
Gain	Selects x1, x5, IQ-MAG or variable
Variable gain	x0.2 to x2.0
Amplitude Accuracy	±0.5 %
IQ Axis	Selects show or hide
Pseudo-Composite Display	Artificially converts component signals into composite signals and displays the result. (the color matrix for HDTV signal is converted into SDTV)
Phase Difference Display	
Display	Displays the phase difference between the SDI signal and external sync signal numerically and graphically Holds and displays eight phase difference values being measured
Display Range	V direction ±1/2 Frame H direction ±1 Line *The phase difference display in the H direction may fluctuate in the range of ±1 clock when the signal is switched.
Sync Signal	HD tri-level sync or black burst
Phase Difference Measurement of Dual Link(future support)	Displays phase difference between Link A and B with the number of the parallel reclock. (including ±1 clock error)
Picture Display	
HDTV Display	Displayed by sampling the pixels (8 bit RGB)
SDTV Display	Displayed by interpolating pixels (8 bit RGB)
Marker Display	Center marker 4:3 or 16:9 marker display Safe action marker display Safe title marker display
Gamut Error Display	Marks sections containing gamut errors within the picture
Line Select	Displays the selected line as a marker
English Subtitle Display	Displays English subtitles in the picture display You can select which type of subtitles to decode and display from EIA-708, EIA/CEA-608-B(EIA-708-B), EIA/CEA-608-B(EIA/CEA-608-B), and VBI(EIA/CEA-608-B line 21).
Corresponding Standards	SMPTE 334M CIA/EIA-608-B
AFD Display	Displays abbreviations for SMPTE 2016-1-2007 standard AFD codes
Status Display	
Status Display of SDI Signal	
Signal Detection	Detects the presence or absence of SDI signals.
Format	Detected among the supported video signal formats (Detects only the frame rate during dual link)
Embedded Audio Channel	Displays the embedded audio channel number. (Supported only link A during dual link)
Error Detection of SDI signals	
CRC Error	Detects transmission error of HD-SDI signals.
EDH Error	Detects transmission error of SD-SDI signals.
TRS Error	Detects errors in the TRS position and protection bit.
Line Number Error	Line number errors in the HD-SDI signals are being detected.
Illegal Code Error	Detects data in the range of 000h to 003h and 3FCh to 3FFh outside the TRS or ADF header.
Embedded Prohibition Error	Detects the presence or absence of embedded audio at the embedded prohibition line. (Supports only link A during dual link)
Cable Length Meter Error	Detects the signal attenuation and displays the result.
Phase Difference Error in Dual Link	Measures the phase difference between link A and link B to detect the error. it will be made the error If phase difference exceeds 100 clocks. (Phase difference measurement inclueds the error of ±1 clock.)
Error Level Setting	
Component Gamut	Common with the gamut error
Composite Gamut	Common with the composite gamut error
Freeze Detection	Detects video freeze according to the specified time (Dual link is not supported.)
Black Detection	Detects blackouts in the video (Dual link is not supported.)
Error Detection of Embedded Audio	
BCH Error	Detects transmission errors of embedded audio packets in the HD-SDI signal.
DBN Error	Detects sequential errors in audio packets.
Parity Error	Detects parity errors in audio packets embedded in HD-SDI dignals
Error Detection of Ancillary Data	
Checksum Error	Detects transmission errors in the ancillary data.
Parity Error	Detects parity errors in the ancillary data header.
Image Quality Evaluation	
Gamut Error	Detects Gamut Errors by specifying duration and size. Upper limit: 90.8 % to 109.4 % (0.1 % steps) Lower limit: -7.2 % to +6.1 % (0.1 % steps)
Composite Gamut Error	Monitors the level error when the component signal is converted into composite signal Upper limit: 90.0 % to 135.0 % (0.1 % steps) Lower limit: -40.0 % to 20.0 % (0.1 % steps)
Level Error (Dual link is not Supported)	Detects Y C_B C_R level errors Y upper limit: -51 mV to 766 mV (1-mV resolution) Y lower limit: -51 mV to 766 mV (1-mV resolution) C_B C_R upper limit: -400 mV to 399 mV (1-mV resolution) C_B C_R lower limit: -400 mV to 399 mV (1-mV resolution)
Event Log	
Number of Logs	Error items, time stamps, etc.
5 Bar Display	
Bar Display	Displays the Y GBR component Gamut and compos-

	ite Gamut
Analysis Function	
Data Dump Display	
Display Format	Displayed by serial data sequence or channel separation.(Select link A, link B, or link A/B to be displayed for dual link)
Line Select	Displays the selected line
Sample Select	Displays the selected sample
Jump Function	Move to EAV or SAV by one-key operation
Data Output	Save data in text format to a PC via or Ethernet or USB memory.
Audio Control Packets (only link A is supported for dual link)	
Display Content	Analyzes and displays the audio control packets
Group Selection	One group is selected from four groups.
EDH Display	
Standard Supported	SMPTE RP-165
Display Content	Analyzes and displays the EDH packets. Displays the received CRC errors.
Format ID Display	
Standard Supported	SMPTE 352M ARIB STD-B39 (only SMPTE 352M is supported for dual link)
Display Content	Analyzes and displays the Format ID.
Closed Caption Data Display (not supported for dual link)	
Standard Supported	ARIB STD-B37,EIA/CEA-608,EIA-708
Display Content	Analyzes and displays the closed caption data.
Inter-Stationary Control Data (NET-Q) Display (not supported for dual link)	
Standard Supported	ARIB STD-B39
Display Content	Analyzes and displays the Inter-Stationary Control Data.
Log Function	Logs Q signals
V-ANC User Data Display (not supported for dual link)	
Standard Supported	ARIB TR-B23
Arbitrary ANC Packet Display (only link A is supported for dual link)	
Method of Specifying ANC	Selects DID or SDID
Time Code Display (only link A is supported for dual link)	
Corresponding Time Code	Selects LTC or VITC SMPTE RP-188
Display Method	Switches the display of internal clock, and the time code.
Embedded Audio Processing	
Clock Generation System	SD-SDI: Generated from the video clock HD-SDI: Generated from the video clock Dual link (future support): Generated from the video clock

Function Name	Standard	DID	SDID
EIA-708 CC decode function	SMPTE334M	161h	101h
EIA/CEA-608-B CC decode function (EIA-708-B)	SMPTE334M	161h	101h
EIA/CEA-608-B CC decode function (EIA/CEA-608-B)	SMPTE334M	161h	102h
VBI (EIA/CEA-608-B Line21) CC decode function	CEA/EIA-608-B		

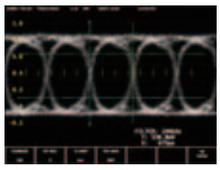
Closed Caption Processing	The closed caption data that is multiplexed in the SDI signal can be overlaid on the picture display.
SMPTE System	CEA/EIA-608-B embedded in the CDP packets as defined in CEA/EIA-708-B. CEA/EIA-608-B VBI(CEA/EIA-608-B Line21)
Cable Length Measurement	
Detection method	Converts the SDI signal attenuation into a coaxial cable length and displays the result.
Supported Cables	HD-SDI: Selects L-7CHD, LS-5CFB, or 1694A SD-SDI: Selects LS-5C2V, 8281, or 1505A
Display Range	HD-SDI: From under 5 m to 130 m or more (For L-7CHD: From under 10 m to 200 m or more) *Less than 10 m to greater than or equal to 200 m for L-7CHD SD-SD: From under 50 m to 300 m or more
Accuracy	±20 m
Resolution	5 m (For L-7CHD: 10 m)
Frame Capture Function	
Media	Internal memory (RAM) or USB memory
Internal Memory Capacity	Video data 1 Frame 2 Systems For Dual Link mode: 1 Frame 1 system
Data Output	Save capture data to a PC via Ethernet network or a USB memory.
Recalling Capture Data	Recalls and displays the Picture/ Waveform/ Vector of 1 frame capture data. The capture data saved in the USB memory can be read back. (Reading back operation is possible only if an SDI input of the same format as the captured data is available)
Waveform Comparison	Simultaneous display of captured data and real data.
Power Consumption	Supplied from the instrument; 18 Wmax.
Weight	0.28 kg, 0.6 lbs.
Accessory	Instruction manual 1

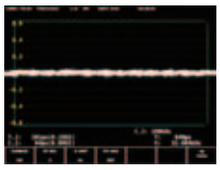
Precautions Concerning Dual Link Operation
Aliasing occurs in the V sweep display of 1080p/60, 59.94, and 50, because the unit processes the sampling data. The picture display is processed using 8 bits even if the quantization is set to 12 bits.
In addition, waveform display in external synchronization mode is not allowed if 1080p/60 (59.94) or 1080p/50 signal is applied.

LV 58SER02 EYE PATTERN UNIT (HD-SDI, SD-SDI)

Plug-In Unit

The LV 58SER02 is an optional unit that can be inserted into an LV 5800 (MULTI MONITOR) input slot or the LV 7800 (MULTI RASTERIZER), and it can be used to display eye patterns. The LV 58SER02 can be used to display the eye patterns of SDI signals and measure jitter when it is used with the LV 58SER01A (SDI INPUT), and it can be used to display the eye patterns of DVB-ASI signals when it is used with the LV 58SER04 (MPEG DECODER).


Eye Pattern


Jitter

FEATURES

- **Supports HD-SDI, SD-SDI and DVB-ASI**
- **6 Systems of Eye Pattern Displays and Jitter Measurement**
  Displays the SDI signal eye pattern or measures the jitter of 1 system among up to 6 systems by combining 3 SDI input units and selecting A or B among the 3 modules. (2 Eye units cannot be installed simultaneously.)
- **Eye Pattern Display**
  Displays the eye pattern of the timing jitter or alignment jitter by switching the filter.
- **Jitter Measurement**
  The jitter measurement by the phase detection method allows accurate jitter measurement even if the eye is barely open. In addition, timing jitter and alignment jitter can be measured.
- **Automatic Measurement**
  The eye pattern display allows automatic measurement of the eye pattern amplitude, rise time, and fall time. The jitter display allows automatic measurement of the timing jitter and alignment jitter values.
- **Jitter Display Using Video Sweep**
  Allows V sweep and H sweep displays.
- **Simultaneous Display on the Multi Display**
  The multi display allows the eye pattern waveform and jitter waveform to be displayed simultaneously. In addition, the eye pattern display screen automatically measures the eye pattern amplitude, rise time, and fall time, while the jitter display screen automatically measures the timing jitter and alignment jitter.
- **Alarm Monitoring**
  The alarm monitor mode allows the eye pattern amplitude, rise time, and fall time to be monitored with respect to the threshold level specified in advance. It also monitors the timing jitter and alignment jitter using the phase detection method. An alarm is displayed when the threshold level is exceeded. The alarm can also be logged.

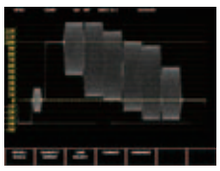
LV 58SER02 EYE PATTERN UNIT SPECIFICATIONS

Supported Formats	
Data Rate	
HD-SDI	SMPTE292M 1.485 Gbps, or 1.485/1.001 Gbps
SD-SDI	SMPTE259M 270 Mbps
Eye Pattern	
Display	Displays the input waveform before equalizing
Method	Equivalent time sampling method
Amplitude Accuracy	800 mV ±5 % for 800 mV input
Time Axis	2 / 4 / 16 Eye pattern Display
Time Axis Accuracy	±3 %
Jitter Filter	10 Hz HPF 100 Hz HPF 1 kHz HPF 100 kHz HPF
Jitter Detection	
Method	Phase detection method
Amplitude Accuracy	±10 % (typical value for when the input jitter is 1 UI, input jitter frequency is 10 kHz, the filter setting is 100 Hz, and the gain setting is x8)
Time Axis	H rate or V rate
Time Axis Accuracy	±3 %
Jitter Filter	10 Hz HPF 100 Hz HPF 1 kHz HPF 100 kHz HPF
Cursor Measurement	Jitter measurement using cursors
Automatic Measurement	Displays the amount of jitter in seconds (sec) and unit intervals (UIp-p) (* Doesn't support JITTER measurement of a DVB-ASI standard Eye pattern only.)
Power Consumption	Supplied from the instrument; 20 Wmax.
Weight	0.4 kg, 0.9 lbs.
Accessories	Coaxial cable.....1 Instruction manual.....1

LV 58SER03 COMPOSITE VIDEO INPUT UNIT

Plug-In Unit

This unit is installed in the LV 5800 (MULTI MONITOR) or LV 7800 (MULTI RASTERIZER), and it is used to display and measure the analog NTSC or PAL video signals. The LV 5800's newest functions related to waveforms such as the waveform monitor, vectorscope, simple picture monitor, and EXT REF phase display function can be used on analog video signals of NTSC and PAL formats.
For a description of the specifications other than those of this newly added option, see the specifications of the standard model.
This unit in combination with the LV 58SER01A is suitable for monitoring in a mixed environment containing SDI and composite signals.


Composite

FEATURES

- **Input/Output**
  There are two input connectors: INPUT A and INPUT B.
  The selected channel is output from the PIX OUT connector on the rear panel.
- **Display**
  Waveform display, vectorscope display, picture display, and EXT REF phase display function are available.
  In addition, the luminance component can be displayed using a low-pass filter.
- **SCH Measurement Function**
  You can perform SCH measurements which are essential when editing the composite signal.
- **EXT REF Phase Display Function**
  Compares the input signal to the V.H sync signal of the external reference signal and displays the phase difference numerically and graphically.
  This function makes synchronization phase management easy.
- **Miscellaneous**
  Cursors can be used to measure the amplitude and time, with high accuracy.

LV 58SER03 COMPOSITE VIDEO INPUT UNIT SPECIFICATIONS

Measured Signal	Composite video signal (NTSC/PAL)
Supported Standards	SMPTE 170M and ITU-R BT.470
Input	
Composite Video	Select A or B
Input Connector	BNC connector
Maximum Input Voltage	±5 V (DC + Peak AC)
Output	
Composite Video	
Output Signal	Active
Output Connector	BNC connector 1 system 1 connector
Output Amplitude	1 Vp-p ± 5 %
Display	
WAVE Display	Waveform display
VECTOR Display	Vectorscope display
PICTURE Display	Picture display
Waveform Display Section	
Vertical Axis	
Sensitivity	V Scale (PAL) -0.3 V to 0.7 V IRE Scale (NTSC) -40 IRE to 100 IRE
Gain	Select x1 or x5
Variable Gain	≤ 0.2 to ≥ 2
Amplitude Accuracy	±1 %
Filter	Luminance filter
DC Restorer	Clamp to the back porch (fixed)
Horizontal Axis	
Operation Mode	Overlay Displays only a single waveform
Display Format	
Line Display	1H or 2H
Line Magnification	Select x1, x10 or x20
Field Display	1V or 2V
Field Magnification	Select x1, x20 or x40
Time Base Accuracy	±1 %

Vectorscope Display Section	
Sensitivity	Select 75 % or 100 % Using a color bar
Gain	Select x1, x5, or IQ-MAG
Variable Gain	0.2 to 2
Phase Accuracy	±2 °
Amplitude Accuracy	±3 %
Phase Adjustment Range	360°
Setup (NTSC)	Select 0 % or 7.5 %
NTSC Display (PAL)	Select NTSC or PAL display
IQ Axis	Select show or hide
SCH	Displays the SCH value numerically
Picture Display	
Marker Display	16:9 marker display Safe action marker display Safe title marker display Center marker display
Display Size	Reduced display, full frame display, and actual size display
Line Select	Displays a marker for the selected line.
Image Quality Adjustment	Brightness adjustment, contrast adjustment, RGB level adjustment, and RGB bias adjustment
Status Display Section	
Display	Displays the phase difference between the composite signal and external sync signal numerically and graphically. Holds and displays eight phase difference values being measured.
Display Range	
V direction	±1/2 frame
H direction	±1/2 Line
Synchronization Signal	NTSC/PAL black burst signals
Power Consumption	Supplied from the instrument; 9 Wmax.
Weight	0.25 kg, 0.5 lbs.
Accessory	Instruction manual 1

LV 58SER04 MPEG DECODER

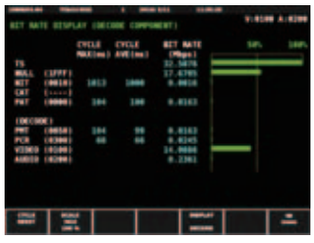
Plug-In Unit

The LV 58SER04 is an input unit that receives MPEG-2 TS (DVB-ASI) audio and video signals, decodes them, and transfers them to the LV 5800 (MULTI MONITOR) or the LV 7800 (MULTI RASTERIZER) to be displayed. After a signal is decoded, its video signal waveforms, vectors, pictures, and audio signals can be displayed. The LV 58SER04A can also be used to monitor errors defined by ETSI ETR-290, to display PAT and PMT data, and to display TS bit rates and the bit rates for each PID. These features are ideal for continuous monitoring of MPEG-2 TS signals in broadcasting stations and similar facilities. When combined with other units, the LV 58SER04 can also:

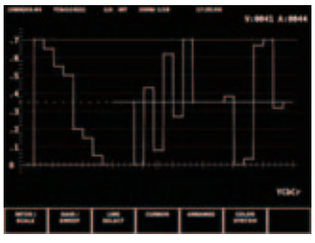
- Display eye patterns for DVB-ASI signals (when combined with the LV 58SER02)
- Display levels and Lissajous curves for audio signals (when combined with the LV 58SER40A)

PID

TMCC



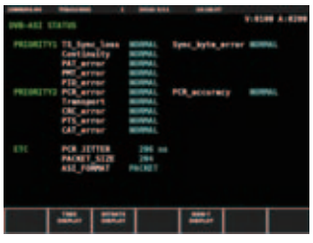
BIT RATE



Waveform

Vector

SFN



DVB-ASI STATUS

FEATURES

- **DVB-ASI Input Connector**
  The LV 58SER04 comes with one DVB-ASI input connector.
- **Video Decoding**
  The LV 58SER04 decodes compressed MPEG-2 TS video data (MPEG-2 Video 4:2:2,4:2:0) and displays video signal waveforms, vectors, and pictures.*1
- **Audio Decoding**
  The LV 58SER04 can be combined with the LV 58SER40A (DIGITAL AUDIO) to decode MPEG-2 TS audio data, show Lissajous curves, sound images, and sound levels, and transmit digital audio signals.*1
  The decodable audio data types are MPEG-2 AAC, Dolby Digital (AC-3), LPCM (SMPTE 302M), and MPEG-1 Layer 2.*2
- **PID Search**
  The LV 58SER04 can automatically search for the PID of audio and video data.
- **Error Detection**
  The LV 58SER04 monitors and displays ETSI ETR 290 priority 1 and 2 errors.*3
- **Status Display**
  The LV 58SER04 can display PID bitrates, PCR jitter, selected PID dumps, PAT, and PMT.
- **Eye Pattern Display**
  You can install the LV 58SER02 (EYE PATTERN unit) with the LV 58SER04 to display DVB-ASI eye patterns.*4

*1 The LV 58SER04 cannot descramble scrambled broadcasts, and it may not be able to decode all MPEG-2 formats.
The LV 58SER04 can only decode one stream of audio and video data at a time. You cannot decode and display different audio and video data streams simultaneously on the multi display using only one MPEG-2 input unit. If you display the decoded data stream using the multi display and then change the decoded PID, the PID for every screen will change.
*2 To decode Dolby Digital (AC-3), the LV 58SER40A (DIGITAL AUDIO) must be equipped with the Dolby E option.
*3 There are some limitations on error detection.
*4 Jitter cannot be measured or displayed.

LV 58SER04 MPEG DECODER SPECIFICATIONS

Standards	
Corresponding Standards	ISO/IEC 13818-1
Profile and Level	MP@HL, MP@ML, 422@ML, 422P@HL
DVB-ASI I/O	
Input Connector	
Input Connector	BNC-R
Input Signal	
Serial Clock	270 MHz
Transmission Mode	Packet/Burst
Maximum Bit Rate	66 Mbps
Supported Packet Sizes	188, 204, and 208 bytes
Packet Size Detection	Audio Detects supported packet sizes
Decoding Function	
Video Formats	1920x1080i / 59.94, 60, 50 (4:2:0,4:2:2) 1440x1080i / 59.99, 60, 50 (4:2:0,4:2:2) 1280x720p / 59.94, 60, 50 (4:2:0,4:2:2) 720x480i / 59.94 (4:2:0,4:2:2) 720x576i / 50 (4:2:0,4:2:2)
Audio Signals	MPEG-2 AAC, Dolby Digital(AC-3), MPERG-1 LAYER-2 LPCM(SMPTE 302M) (LV 58SER40A (DIGITAL AUDIO) is necessary separately. In addition, when decoding Dolby Digital (AC-3), Dolby E option is necessary) *This unit decodes only one set of video data and audio data. Even if you use the LV 5800 multi display, the unit cannot decode different video and audio streams simultaneously. If you assign the display showing the data that this unit is decoding to multiple displays and you change the PID of the data being decoded, the PIDs on all displays change simultaneously.
Video Signal Waveform Display Function	
Waveform Operation	
Display Mode	Overlay display (displays component signals overlaid) Parade display (displays component signals side by side)
Y, C_B, C_R to G, B, R Conversion	Converts Y, C_B, C_R signals into G, B, R and displays the result
Pseudo-Composite Display	Displays component signals artificially as composite signals
Channel Assignment	G, B, R or R, G, B order (when displaying G, B, R converted signals)
Line Select	Displays the selected line
Vertical Axis	
Sensitivity	
V Scale	0 to 0.7 V, -0.3 to 0.7 V
% Scale	0 to 100 %, -50 to 100 %
Gain	x1, x5, variable
Variable Gain	x0.2 to x2
Amplitude Accuracy	±0.5 %
Horizontal Axis	
Line Display	
Display Mode	Overlay: 1H, 2H *1 Parade: 1H, 2H, 3H
Magnification	x1, x10, x20, ACTIVE, BLANK
Field Display	
Display Mode	Overlay: 1V, 2V *1 Parade: 1V, 2V, 3V
Magnification	x1, x20, x40
Time Accuracy	±0.5 %
Cursor Measurement	
Composition	
Horizontal Cursors	2 cursors (REF and DELTA)
Vertical Cursors	2 cursors (REF and DELTA)
Amplitude Measurement	Percentage and voltage displays
Time Measurement	Displays time in seconds
Frequency Measurement	Displays the frequency by considering the time between cursors to be a cycle *1 The 2V display is not allowed if the input signal is progressive.
Vectorscope Display	
Scale	75 %, 100 % (for the color bars)
Gain	x1, x5, IQ-MAG, variable
Variable Gain	x0.2 to x2
Amplitude Accuracy	±0.5 %
IQ Axis	Show or hide
Pseudo-Composite Display	Displays component signals by converting to composite signals that have burst added artificially. (The color matrix for HDTV signals is converted to SDTV.)
Picture Display	Displayed by sampling pixels
HDTV Display	Displayed by interpolating pixels
SDTV Display	Center marker display
Marker Display	4:3 or 16:9 marker display Safe action marker display Safe title marker display Marks the selected line
Line Select	Optimized display, actual size display
Display Size	GBR level adjustment, contrast adjustment, brightness adjustment
Section and PCR Information	
PAT	
PAT Detection	Automatically recognizes packets whose PID is 0000h as PAT
Cycle Measurement *2	Measures the PAT cycle in 1-ms intervals
PAT data display	PAT dump display
PMT	
PMT Detection	Select the PID of the PMT to be decoded
Cycle Measurement *2	Measures the PMT cycle in 1-ms intervals
PMT data display	PMT dump display
NIT	
NIT Detection	Automatically detects packets with the NIT PID specified by the PAT.
Cycle Measurement *2	Measures the NIT cycle in 1-ms intervals
CAT	
CAT Detection	Recognizes packets whose PID is 0001h as CAT
Cycle Measurement *2	Measures the CAT cycle in 1-ms intervals
PCR	
PCR detection	Automatically detects packets with the PCR PID specified by the selected PMT
Cycle Measurement *2	Measures the PCR cycle in 1-ms intervals
PCR jitter	Measures the PCR accuracy based on the internal reference clock *2: If a section is divided into multiple TS packets, the cycle is measured for each section.
Dump Display	
Function	Dump display of the PAT, PMT, and the dump display of the selected packet
Notation	Displays binary and hexadecimal values and contents
Bit Rate Display	
Function	Displays the bit rate and cycle of the main sections and packets
Bar Display	Displays the occupied bandwidth with respect to the TS bit rate using bars
Displayed Sections	NIT, CAT, PAT, and PMT
Displayed Packets	Video, audio, PCR, and null
Power Consumption	Supplied from the instrument; 20 Wmax.
Weight	0.4 kg, 0.9 lbs.
Accessory	Instruction manual.....1

LV 58SER06 3G-SDI INPUT (3G-SDI, HD-SDI, SD-SDI, HD-SDI, DUAL)

Plug-In Unit

This 3G-SDI input unit can be installed into an input slot of an LV 5800 (multi monitor) or into an LV 7800 (multi rasterizer).
The LV 58SER06 supports 3G-SDI levels A and B, and it can be used to display information such as 3G-SDI signals' video waveforms, vector waveforms, pictures, and error detection results on an LV 5800 or LV 7800. Additionally, by combining the LV 58SER06 with the LV 58SER40A, you can display information such as the Lissajous curves and level meters of embedded audio signals.
What's more, the LV 58SER06 can generate 3G-SDI signals and test patterns.

FEATURES

- **2 Serial Digital Inputs**
  The LV 58SER06 has two switchable 3G-SDI input connectors for monitoring.
- **2 Serial Digital Outputs**
  The LV 58SER06 can reclock input signals that are received by the input terminal that has been selected with the input key (3G-SDI A or 3G-SDI B) and generate these reclocked signals from the 3G-SDI A/B output connector.
  From the 3G-SDI B output connector, the LV 5800 can transmit a reclocked signal from the 3G-SDI signal that is received through the 3G-SDI B input connector.
- **Test Pattern Signal Outputs**
  The LV 58SER06 can operate as a 3G-SDI signal pattern generator to generate a 3G-SDI signal from the two output terminals.
- **Video Signal Display**
  The LV 58SER06 can be used to display 3G-SDI signals' video signal waveforms, vector waveforms, and pictures on not only the 1-screen display, but 2- and 4-screen multi displays.
- **Error Detection**
  The LV 58SER01A can detect CRC and other 3G-SDI signal errors that are related to embedded audio signals and ancillary data.
- **Automatic Video Format Setting**
  The LV 58SER06 automatically sets the video format based on payload ID packets.
- **5 Bar Display**
  You can use the 5 bar display to simultaneously monitor component and composite gamut.
- **Embedded Audio Extraction**
  By combining the LV 58SER06 with a digital audio unit (the LV 58SER40A), you can perform actions such as displaying level meters and Lissajous curves. You can also generate AES/EBU signals.

LV 58SER06 MPEG DECODER SPECIFICATIONS

Video Formats and Corresponding Standards

3G-SDI Video System

	Color System	Quantization	Scanning	Frame Frequency	Corresponding Standard
3G-SDI-A	Y, C_B, C_R 4:2:2	10 bits	1080p	60, 59.94, 50	SMPTE 424M SMPTE 425M
3G-SDI-B		10 bits	1080p	60, 59.94, 50	SMPTE 424M SMPTE 425M

Single Link System Video

	Color System	Quantization	Scanning	Frame Frequency	Corresponding Standard
HD-SDI	Y,C_B,C_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M SMPTE 292M
HD-SDI			1080p	30/29.97/25/24/23.98	
HD-SDI			1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
HD-SDI			720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
SD-SDI			525i	59.94	SMPTE 259M
SD-SDI			625i	50	

Dual Link System Video

	Color System	Quantization	Scanning	Frame Frequency	Corresponding Standard
HD-SDI DUAL	GBR 4:4:4	10 bit	1080i	30/29.97/25/24/23.98	SMPTE 372M
			1080p	30/29.97/25/24/23.98	
			1080PsF	60/59.94/50	
	GBR 4:4:4	12 bit	1080i	30/29.97/25/24/23.98	
			1080p	30/29.97/25/24/23.98	
			1080PsF	60/59.94/50	
	Y,C_B,C_R 4:2:2	10 bit	1080p	60/59.94/50	
	Y,C_B,C_R 4:2:2	12 bit	1080i	60/59.94/50	
			1080PsF	30/29.97/25/24/23.98	
			1080p	30/29.97/25/24/23.98	
	RGB 4:4:4 (2K)	12 bit	1080p	24/23.98	(2048x1080)
			1080PsF	24/23.98	

Other Standards	
Ancillary Data	SMPTE 291M
Embedded Audio	SMPTE 299M (Only the audio data of data stream 1 is supported.)
Format Setting	Manual and automatic
Manual	Manually set the frame frequency
Automatic	The LV 58SER06 detects the format information within the payload ID (SMPTE 325M) and automatically sets the format.
Output Signal	Depending on your selection, the LV 58SER06 generates a reclocked signal (input loop-through) from the input signal or generates a test pattern signal, and transmits it from the 3G-SDI A/B output connector and the 3G-SDI B output connector.
3G-SDI A/B Output Connector	
When Set to Input Reclock	Generates a reclocked signal from the signal received through the selected input channel.
When Set to Test Pattern	Generates a test pattern signal
3G-SDI B Output Connector	
When Set to Input Reclock	Generates a reclocked signal from the signal received through input channel B
When Set to Test Pattern	Generates a test pattern signal
Test Pattern Generation	
Format	Y, C_B, C_R 4:2:2 1080p/60, 59.94, 50
Corresponding Standard	SMPTE424M and SMPTE425M
Pattern	100 % color bar (100 % white, 100 % saturation),75 % color bar (100 % white, 75 % saturation),100 % white, 50 % white, black, check field, equalizer, and PLL
Embedded Audio	Not supported
Bit Rate	2.97 Gbps or 2.97/1.001 Gbps
Oscillation Clock	Driven by the internal oscillator 148.5 MHz ± 10 ppm or 148.5/1.001 MHz ± 10 ppm
Input/Output Connectors	
3G-SDI Input	
Input Connectors	2 BNC connectors 2 connections (channels A and B)
Maximum Input Voltage	±2 V (DC + AC peak)
3G-SDI Output Connectors	
Function	Generation of reclocked signals from the input signals and generation of test patterns
Output Voltage	800 mVp-p ± 10 %
Waveform Display	
Waveform Operations	
Display Modes	
Overlay	Overlays component signals
Parade	Displays component signals side by side
Blanking Period	Show or hide
Y, C_B, C_R to GBR Conversion	Converts the Y, C_B, C_R signal to GBR and displays it
Pseudo-Composite Display	Displays component signals artificially as composite signals
Channel Assignment	Displayed in GBR or RGB order (when displaying GBR converted signals)
Line Select	Displays the selected line
imge Quality Adjustment	Brightness adjustment and waveform color selection (white, green, or multi color) (Multi color is only available on the 1-screen display.)
Vertical Axis	
Sensitivity	
V Scale	0 to 0.7 V or –0.3 to 0.7 V
% Scale	0 to 100 % or –50 to 100 %
Gain	x1, x5, or variable
Variable Gain	x0.2 to x10

LV 5800/LV 7800 Platform Options

LEADER

Amplitude Accuracy	±0.5 %
Horizontal Axis	
Line Display	
Display Format	Overlay: 1H, 2H Parade: 1H, 2H, 3H
Magnification	x1, x10, x20, ACTIVE, or BLANK
Cursor Measurement	
Composition	
Horizontal Cursors	2 (REF and DELTA)
Vertical Cursors	2 (REF and DELTA)
Amplitude Measurement	Percentage and voltage displays
Time Measurement	Second display
Frequency Measurement	Computes and displays the frequency with the length of one period set to the time between two cursors
Vectorscope Display	
Scale	75 % or 100 % (color bar)
Gain	x1, x5, IQ-MAG, or variable
Variable Gain	x0.2 to x10
Amplitude Accuracy	±0.5 %
IQ Axis	Show or hide
Pseudo-Composite Display	Converts component signals into composite signals with artificially added burst and displays the results (The color matrix is converted to SDTV.)
Picture Display	
Display Format	Samples pixels and displays them (R, G, and B each use 8 bits)
Marker Displays	Center marker, 4:3 marker, safe action marker,and safe title marker
Gamut Error Display	Marks the areas of the picture that exhibit gamut errors
Line Select	Marks the selected line
Display Sizes	Compressed and full frame
Status Display	
3G-SDI Signal Status Display	
Signal Detection	Detects the presence of a 3G-SDI signal
Format	Detects from the supported video signal formats (When the LV 58SER06 is configured to automatically set the format, the format is detected from the payload ID.)
Embedded Audio Channel	Displays the embedded audio channel number (Only the audio data of data stream 1 is supported.)
3G-SDI Signal Error Detection	
CRC Error	Detects 3G-SDI signal transmission errors
TRS Error	Detects TRS position and protection bit errors
Line Number Error	Detects 3G-SDI signal line number errors
Illegal Code Error	Detects data within the range of 000h to 003h and 3FC to 3FF in locations other than the TRS and ADF headers
Ancillary Data Error Detection	
Checksum Error	Detects ancillary data transmission errors
Parity Error	Detects ancillary data header parity errors
Image Quality Error Detection	
Frequency Response	Approx. 1 MHz LPF (IEEE STD 205 response) and approx. 2.8 MHz LPF (removes transient composite gamut and gamut errors due to overshoot and other anomalies)
Gamut Error	Detects time-specified gamut errors
Upper Limit	90.8 to 109.4 %
Lower Limit	–7.2 to 6.1 %
Area Specification	0.1 to 5.0 %
Time Specification	1 to 60 frames
Composite Gamut Error	Detects level errors that occur when component signals are converted to composite signals
Upper Limit	90.0 to 135.0 %
Lower Limit	–40.0 to 20.0 %
Area Specification	0.1 to 5.0 %
Time Specification	1 to 60 frames
Embedded Audio Error Detection (Only data stream 1 is supported for 3G-SDI level B.)	
BCH Error	Detects transmission errors in the audio packets that are embedded in 3G-SDI signals
DBN Error	Detects audio packet continuity errors
Parity Error	Detects parity errors in the audio packets that are embedded in 3G-SDI signals
Embedded Position Error	Detects the presence of audio in lines where it should not be embedded
Event Log	
Recorded Events	Errors, changes in the input channel, and time stamps

5 Bar Display	
Bar Display	Displays the Y GBR component and composite gamut (When you are using line select, only the component gamut of the selected line is detected.)
Error Level Setting	
Component Gamut	The same as the gamut error
Composite Gamut	The same as the composite gamut error
Frequency Response	The same as the gamut error
Analysis Features	
Data Dump Display	
Display Format	Displays data separated by serial data sequence or by channel (The 3G-SDI level B data dump can display data stream 1, data stream 2, and data stream 1 and 2 simultaneously.)
Line Select	Displays the selected line
Sample Select	Displays from the selected sample
Jump Feature	Moves to EAV or SAV with the press of a single button
Data Output	Data can be saved as text files to USB memory or to a PC over an Ethernet
Audio Control Packet Display (Only data stream 1 is supported for 3G-SDI level B.)	
Display Details	Displays audio control packet analysis
Display Format	Text, hexadecimal, and binary
Group Selection	Select one group from four available groups
Format ID Display	
Corresponding Standard	SMPTE 352M
Display Details	Displays payload ID packet analysis
ANC Packet Display (Only data stream 1 is supported for 3G-SDI level B.)	
ANC Specification Method	DID/SDID
Display Format	Hexadecimal and binary
Time Code Display (Only data stream 1 is supported for 3G-SDI level B.)	
Supported Time Codes	LTC and VITC (SMPTE 12M-2)
Display Mode	The instrument's internal clock or the time code
Embedded Audio Processing	
Clock Generation	Generated from the video clock
Synchronization	All audio channels must be synchronized to the video clock.
Phases	All phases must be in-sync.
Channel Separation	You may select a maximum of 4 groups of 16 channels each. (Only data stream 1 is supported for 3G-SDI level B.) * You need an LV 58SER40A unit to display and generate audio.
Frame Capture Feature	
Function	Captures frame data
Capture Timing	Manual and automatic (error capture)
Display	Displays the captured frame data or superimposes the captured frame data over the input signal
Media	Internal memory (RAM) and USB memory You can only record one frame of data to the internal memory.
Data Output	Screen captures can be saved as .dpx files, .tif files, or in a file format that the instrument can load. They can be saved to USB memory or sent to a PC through an Ethernet connection.
Data Input	Data saved to USB memory can be loaded and displayed on the instrument.*1
Error Capturing	Automatically captures frame data when an error occurs *1 Captured data cannot be displayed unless the instrument is receiving a 3G-SDI signal that matches the format of the captured signal.
Environmental Conditions	Conforms to those for the LV 5800 or LV 7800
Power Consumption	Supplied from the instrument; 18 W max.
Weight	0.24 kg 0.53 lbs.
Accessory	Instruction manual 1

LV 58SER07 3G-SDI EYE PATTERN (3G-SDI, HD-SDI, SD-SDI)

Plug-In Unit

3G HD-SDI SD-SDI

The LV 58SER07 is a display unit. When it is inserted into one of the input slots of the LV 5800 or LV 7800 along with the LV 58SER06 (3G-SDI INPUT), it enables the display and measurement of the eye patterns and jitter of serial digital signals.
The LV 58SER07 enables the measurement and observation of the physical characteristics of not only 3G-SDI signals but also HD-SDI and SD-SDI signals.

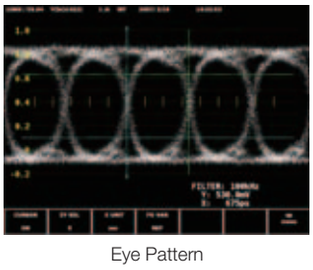
FEATURES

- **Support for Three Types of SDI Signals**
  When the LV 58SER07 is used with the LV 58SER06 (3G-SDI INPUT), it enables the display of eye patterns, the display of jitter, and the execution of automatic measurements not only for 3G-SDI signals (both levels A and B) but also for HD-SDI and SD-SDI signals.
- **Two Switchable SDI Inputs**
  The LV 58SER07 has two input connectors that each support three different SDI signal types. The controls on the LV 5800 or LV 7800 panel can be used to switch between the two inputs. (*1)
- **Eye Pattern Display**
  Measurements of 3G-SDI signals have low noise and wide bandwidth characteristics thanks to the use of a new kind of circuit.
- **Jitter Display**
  Because a phase detection method is used, accurate jitter measurements can be performed even on degraded signals for which eye patterns would not be useful. Also, V rate and H rate sweep displays synchronized to the video signal are useful for analyzing jitter that originates in digital video data.
- **Simultaneous Eye Pattern and Jitter Display**
  When a serial digital signal is selected in the multi screen display of the LV 5800 or LV 7800, its eye pattern and jitter waveform can be displayed simultaneously. (*2)
- **Filter Settings**
  The measurement of the timing jitter and alignment jitter of an SDI signal can be performed through the switching of filters in the eye pattern and jitter displays.
- **Automatic Measurement**
  The automatic measurement feature enables the automatic measurement of the amplitude, rise and fall times, and jitter level of serial digital signals. The level of timing jitter and alignment jitter can be measured.
- **Alarm Monitoring**
  The LV 58SER07 can display alarms and make log entries when the values that it monitors exceed their user-specified threshold values. The LV 58SER07 can monitor the rise time (Tr), the fall time (Tf), the difference between the rise and fall time (Tr-Tf), the timing jitter, and the alignment jitter of a serial digital signal. (*3)

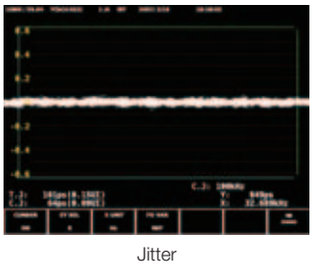
*1 When the LV 58SER07 is inserted in a device, only one LV 58SER06 (3G-SDI INPUT) can be inserted in the device with it. Also, multiple LV 58SER07s cannot be inserted into the same device or inserted into a device with the LV 58SER02. The LV58SER07 cannot be used with the LV 58SER01A.
*2 Simultaneous eye pattern and jitter display can only be performed for a single signal. The simultaneous display of different signals is not possible.
*3 Alarm display and log recording are only valid in the eye pattern and jitter displays of the LV 58SER07. Alarm monitoring cannot be performed in the background.

LV 58SER07 SPECIFICATIONS

Supported Formats	
Data Rates	
3G-SDI	SMPTE 424M 2.970 Gbps or 2.970/1.001 Gbps
HD-SDI	SMPTE 292M 1.485 Gbps or 1.485/1.001 Gbps
SD-SDI	SMPTE 259M 270 Mbps
Input Connectors	
Eye-Pattern and Jitter Display Input Connectors	
Function	Input of SDI signals for eye pattern and jitter display
Input Connectors	2 switchable BNC connectors with A and B channels
Input Impedance	75 Ω
Connection Method	Connect to the rear panel of the LV 5800 or LV 7800 using a BNC cable.
Output Connectors	
Dedicated Connectors for Output to the LV 58SER06	
Function	Dedicated output connectors for connecting to the LV 58SER06 INPUT connector
Output Connectors	2 BNC connectors
Output Impedance	75 Ω
Eye Pattern	
Display	Displays the input waveform before equalizing
Method	Equivalent time sampling
Jitter Filters	10 Hz, 100 Hz, 1 kHz, 100 kHz, TIMING, and ALIGNMENT
Cursor Measurement	Amplitude measurement using Y cursors, time measurement using X cursors, and rise time and fall time measurement using the Tr and Tf cursors
Jitter Detection	
Display	Displays the jitter component of an SDI input signal
Method	Phase detection method
Gain	x8, x2, or x1
Jitter Filters	10 Hz, 100 Hz, 1 kHz, 100 kHz, TIMING, and ALIGNMENT
Cursor Measurement	Jitter value measurement through the use of cursors
Automatic Measurement	Timing jitter and current jitter (the number of seconds is indicated by sec, and the unit interval is indicated by UIp-p) through the use of a phase detection method, amplitude, and rise and fall times of eye pattern waveforms
Environmental Conditions	Same as the LV 5800/7800
Accessories	Instruction manual.....1 Coaxial cable.....2



Eye Pattern



Jitter

LV 58SER20 DVI-I OUTPUT UNIT

Plug-In Unit

The LV 58SER20 is a dedicated output unit for the Leader LV 5800 (MULTI MONITOR) and LV 7800 (MULTI RASTERIZER). By installing it, you can output the LCD panel display to an external monitor.

FEATURES

- **DVI-I Connector**
  The connector allows the screen displayed on the LV 5800 to be shown on an external monitor.
  The DVI output provides both digital and analog output allowing the signal to be used on a wide variety of XGA-compatible monitors.

LV 58SER20 DVI-I OUTPUT UNIT SPECIFICATIONS

DVI-I Connector	
Signal Format	Single Link T.M.D.S Analog RGB
Display Format	XGA (Effective area 1024x768 dots)
DDC Function	Not supported
HOT PLUG Detection Function	Not supported
Output Connector	DVI-I 1 system
Power Consumption	Supplied from the instrument; 5 W max.
Weight	0.2 kg, 0.53 lbs.
Accessory	Instruction manual.....1

LV 58SER21 ANALOG COMPONENT OUTPUT

Plug-In Unit

The LV 58SER21 converts one of the video signals received by the LV 58SER01A or LV 58SER04 unit in the LV 5800 or LV 7800 into an analog component signal and transmits the signal.
You can use the LV 58SER21 to display a video signal on an analog picture monitor.

FEATURES

- **Analog component signal output**
  The video signal being measured on the LV 5800 can be displayed on the analog picture monitor.
  Two selectable output modes are provided: to output the signal displayed in the selected area on the mainframe screen, and to output the signal of selected unit.
- **Converting the output signal format**
  The output signal can be converted into the Y, P_B, P_R or GBR regardless of the color format of input video signal.

LV 58SER21 ANALOG COMPONENT OUTPUT SPECIFICATIONS

Video Formats
Dual Link System Video Signal Corresponding Formats

Format	Quantization	Scanning	Frame (Field) Frequency
GBR 4:4:4	10 bit	1080p	30/29.97/25/24/23.98
		1080PsF	30/29.97/25/24/23.98
		1080i	60/59.94/50
	12 bit	1080p	30/29.97/25/24/23.98
		1080PsF	30/29.97/25/24/23.98
		1080i	60/59.94/50
Y,C_B,C_R 4:2:2	12 bit	1080p	30/29.97/25/24/23.98
		1080PsF	30/29.97/25/24/23.98
		1080i	60/59.94/50

*The phase difference between link A and B is automatically corrected up to 100 clocks (approximately 1.4 s) and displayed.

Single Link System Video Signal Corresponding Formats

Format	Quantization	Scanning	Frame (Field) Frequency
Y,C_B,C_R 4:2:2	10 bit	1080i	60/59, 94/50
		1080p	30/29.97/25/24/23.98
		1080PsF	30/29.97/25/24/23.98
		720p	60/59.94/50 30/29.97/25/24/23.98
		525	59.94
		625	50

Analog Output	
Output Signal	YP_BP_R or GBR (the sync information is added to the Y or G channel)
Output Connector	1 set of 3 BNC connectors
Output Impedance	75 Ω
Output Level	
Video Level	700 mVp-p ±3 %
Sync	
HD	600 mVp-p ±10 %
SD	300 mVp-p ±10 %
Phase Difference	±2 ns
Power Consumption	Supplied from the instrument; 9 Wmax.
Weight	0.26 kg, 0.57 lbs.
Accessory	Instruction manual.....1

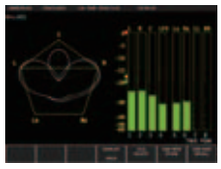
LV 58SER40A DIGITAL AUDIO (Dolby Decoding Capability Optional)

Plug-In Unit

The LV 58SER40(A) (DIGITAL AUDIO) operates as an AES/EBU I/O unit when installed in an LV 5800 input slot or the LV 7800 or as an AES/EBU output unit when installed in an LV 5800 output slot. It allows the LV 5800 to display Lissajous, sound image, level meter, and signal status displays*1 for data in 8 AES/EBU channel pairs (16 channels)*2 and 2 analog audio channels.*3

If the LV 58SER01A (SDI INPUT) is-installed in the LV 5800/7800, this unit can process AES/EBU signals that are embedded in SDI signals. If the LV 58SER04 (MPEG DECODER) is installed, this unit can process MPEG-1 Layer 2 signals, MPEG-2 AAC signals, and LPCM signals that are embedded in DVB-ASI signals.

Loudness



Surround Display (5 LEAVE)

*1 All AES/EBU signals must be synchronized. This unit only supports 48-kHz sampling frequency.
*2 The standard LV 58SER40(A) provides 4 AES/EBU channel pairs (8 channels). Installing the optional I/O expansion unit expands the I/O connectors to 8 AES/EBU channel pairs (16 channels).
*3 The LV 58SER40 does not support the measurement of analog audio signals.

FEATURES

- **8 AES/EBU I/O Pairs (16 Channels)**
  The LV 58SER40(A) is equipped with 4 AES/EBU channel pairs (8 channels). Installing the optional I/O expansion unit expands the I/O connectors to 8 AES/EBU channel pairs (16 channels). This unit operates as an AES/EBU I/O unit when installed in an LV 5800 input slot or the LV 7800 or as an AES/EBU output unit when installed in an LV 5800 output slot.
- **ITU BS. 1770-I Loudness meter**
- **Surround Display (5 LEAF)**
- **Headphone Output**
  When you install this unit into an LV 5800 input slot or the LV 7800, you can listen to the audio of the selected channel using headphones.
- **Various Display Features**
  This unit enables the LV 5800 to display the following items on the AES/EBU input signals.
  - Single Lissajous display between any two channels
  - Multi Lissajous display that simultaneously shows 4 or 8 single Lissajous displays of different channel pair combinations.
  - Sound image display
  - Meter display

  The unit also enables the LV 5800 to display the following AES/EBU signal status bits.
  - Channel status bit
  - User bit
  - Validity bit
  - Parity bit

  * You cannot assign the audio measurement display to multiple areas.
- **Analog Audio Input**
  The LV 58SER40A can measure analog audio signals on 2 channels.
- **Dolby Decoding Capability (Optional)**

  * Dolby E, Dolby Digital is a trademark of Dolby Laboratories.

LV 58SER40A DIGITAI AUDIO SPECIFICATIONS

Input and Output Signals	
Supported Formats	IEC60958, Dolby E* (option), Dolby Digital* (option)
Sampling Frequency	48 kHz
Rear BNC Connectors	
Maximum Input Voltage	± 5V (DC + ACpeak)
Output Voltage	1.0 Vp-p ± 10 % (into 75 Ω)
I/O Connectors	BNC connectors (eight channels in four-channel pairs)
Input and Output Switching	Whether to use the connectors as audio signal input connectors or as output connectors for audio signals that are embedded in SDI or DVB-ASI signals is selectable on the LV 5800.
Analog Audio Input	
Maximum Input Voltage	+18 dBm (6.2 Vrms)
Input Connector	D-Sub 25-pin connector on the LV 5800 (DC-coupled balanced input)
Input Impedance	At least 5 kΩ * The LV 58SER40 does not support analog audio input.
Waveform Displays	
Lissajous Display	Single Lissajous display between any two channels Multi Lissajous display that simultaneously shows 4 or 8 single Lissajous displays of different channel pair combinations.
Sound Image Display	
Channel Mapping	L, R, C, LFE, Ls(S), Rs, LL, RR
Surround Formats	3-1, 3-2, 3-2-2
Correlation Meter	Displays the correlation between 2 channels in the range of -1 to 1
Meter Display	
During Multi Lissajous Display	Displays the levels of 8 channels or 16 channels on a bar graph
During Single Lissajous Display	Displays the levels of 2 selected channels on a bar graph
Response Mode Selection*1	
LV 58SER40A	TRUE PEAK, PPM type I, PPM type II, VU/ LOUDNESS-F/LOUDNESS-S
Peak Hold Mode Selection*1	(when the meter response mode is VU)
LV 58SER40A	TRUE PEAK, PPM type I, PPM type II
Peak Hold Time	0.5 to 5.0 s (in 0.5-s steps), HOLD
Display dynamic range*2	-60 dBFS, -90 dBFS
Reference Level Setting	-40.0 to 0.0 dBFS
Warning Level Setting	-40.0 to 0.0 dBFS
Over Level Setup	-40.0 to 0.0 dBFS *1 The LV 58SER40 PPM (Peak Program Meter) and the LV 58SER40A PPM type I are equivalent. *2 Fixed at -60 dBFS when measuring an analog audio signal.
Status Display	
Channel Status Bit Display	Dump display, text display
User Data Bit Display	Dump display
Dolby E Metadata Display	Text display
Dolby Digital Metadata Display	Text display
Error Detection	Counts the number of errors for each channel
Level Over Detection	Counts the number of times the input signal level exceeds the specified level
Detection Setting	-40.0 to 0.0 dBFS
Clip Detection	Detects an error when the number of maximum signal values that are received consecutively exceeds the specified number of samples and counts the number of times this error occurs
Detection Setting	1 to 100 samples
Mute Detection	Detects an error when the length of a received mute signal exceeds the specified duration, and counts the number of times this error occurs
Detection Setting	1 to 5000 ms
Parity Error Detection	Counts the number of times the input signal parity bit differs from the parity bit value that the LV 58SER40(A) calculates
Validity Error Detection	Counts the number of times the input signal validity bit is 1
CRC Error Detection	Counts the number of times the input signal CRC value differs from the CRC value that the LV 58SER40(A) calculates
Code Violation Detection	Counts the number of times the input signal bi-phase modulation status is in error
Headphone Output	
Output Connector	3.5 mm stereo mini jack
Output Power	121.5 mWrms max. (into 8 Ω)
Power Consumption	Supplied from the instrument; 9 Wmax.
Weight	0.27 kg, 0.6 lbs.
Accessories	Instruction manual .....1 Analog audio cable (LV 58SER40A only).....1

MULTI SDI MONITOR

LV 5750

LEADER

HD-SDI

SD-SDI

CiNELiTE option

CE Upon request

Multi SDI Monitor

The LV 5750 is a waveform monitor for HD-SDI and SD-SDI signals with a color TFT LCD monitor. It is a compact, portable model that contains a waveform monitor, vectorscope, audio level display, picture display, and status display.
Complete digital processing of SDI signals enables highly accurate measurements. In addition, extensive error detection functions and analysis functions are provided which enables the LV 5750 to be used as a SDI signal monitor.

FEATURES

- **Receives either HD-SDI or SD-SDI signals**
- **Employs a color TFT LCD monitor with XGA resolution**
- **Multi screen display, waveform display, vectorscope display, picture display, and embedded audio display**
- **Error detection for SDI signal monitoring**
- **Delivers embedded audio in SDI signals through stereo headphone output**
- **Provides screw holes for attaching a camera tripod**
- **Battery operation and DC power operation**
- **Ancillary Data Display**
- **SDI-EXT REF Phase Difference Display Function**
- **5 BAR DISPLAY**
- **Option**
  FS 3032 CINELITE

- **Option Board** *If you install this unit, you will not be able to use the compact memory card unit that comes standard.

LV 5750-01
Ethernet Unit

LV 5750-02
Remote Control Unit

LV 5750 SPECIFICATIONS

Video Formats and Corresponding Standards
Video Signal Standards

Format		Corresponding Standard
Scanning	Frame (Field) Rates	
1080i	60/59.94/50	SMPTE 274M
1080p	30/29.97/25/24/23.98	SMPTE 292M
1080PsF	30/29.97/25/24/23.98	SMPTE RP 211 SMPTE 292M
720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
525i	59.94	SMPTE 259M
625i	50	

Input/Output Connector	
SDI Input	
Input Connector	BNC connector 2 systems (A/B switching type)
External Synchronization Input	
Input Signal	Tri-level sync signal or NTSC/PAL black burst
Input Connector	BNC connector 1 system 2 connectors
SDI Output	
Output Connector	BNC connector 1 connector
Headphone Output	
Output Signal	Separates and outputs the embedded audio signal in the SDI signal
Power Requirements	12 VDC (10 to 18 V), 30 W max.
Dimensions and Weight	215(W)x133(H)x103(D) mm (excluding protrusions) 221(W)x143(H)x168(D) mm (including protrusions) 2.5 kg 8 1/2(W) x 5 1/4(H) x 4 1/16(D) Inch, (excluding protrusions) 8 45/64(W) x 5 5/8(H) x 6 5/8(D) Inch, (including protrusions) 5.5 lbs.
Accessory	Instruction manual.....1

Available until supplies last

WAVEFORM MONITOR

5861V (625 LINES)

- Differentiated-step filters easily display the differential of staircase signals to measure the linearity of luminance components for transmission systems.
- Built-in line selector function for monitoring VITS and VIR signals, a blanking output and a video output.
- Horizontal sweep mode selection from 1H, 2H, 1 µs/div, 1V, 2V, and 2V MAG.

5861V SPECIFICATIONS

Composite Video Signal Input	A and B
Vertical Axis	Frequency Characteristics:FLAT, LUM, CHROMA, DIF GAIN, DIF'D SETEP
Horizontal Axis	2H, 1H, 1us/div, 2V, 1V, 2V MAG sweep
Line Selector	13 to 22, 325 to 334 lines
Size (W.H.D)	215 x 132 x 429 mm, 8 1/2 x 5 1/4 x 16 7/8 Inch
Weight	7.4 kg, 16.31 lbs.

Available until supplies last

CE Upon request

Measures Composite Video Signal Amplitude, Timing, and Frequency Response

PAL VECTOR SCOPE

5851V (625 LINES)

- The 150 mm rectangular CRT with internal graticule (with the scale illumination), it is possible to measure without parallax reading error.
- DP and DG measurements are made using the modulated staircase.
- Use with a waveform monitor to observe the vector VITS and VIR signals.

5851V SPECIFICATIONS

Composite Video Signal Input	Input A, Input B, EXT, REF (subcsrrier)
Chrominance	Phase: ±2 °, Amplitude: ±3 % Differential Phase: ±1° Differential Gain: ±1 %
Measuring Items	Vector measurement (Phase and Amplitude)
Size (W.H.D)	215 x 132 x 429 mm, 8 1/2 x 5 1/4 x 16 7/8 Inch
Weight	7.3 kg, 16.09 lbs.

Available until supplies last

CE Upon request

Vector Display for Composite Video Signal

STEREO AUDIO MONITOR

5835

- Display of images matching aural sensitivity (L ± R)
- Stereo polarity discrimination function
- One-touch calibration and cross calibration

5835 SPECIFICATIONS

X- and Y-Axis Input Terminals	L and R input through Cannon connector on the rear
Input Impedance	Balanced input with 20 kΩ or more, 600 Ω Selectable internal switch
Bandwidth	20 Hz to 20 kHz ±0.5 dB
Phase Difference	20 Hz to 20 kHz ±1°
Gain Adjustment	RANGE (-20 dB,0 dB, +10 dB) VARIABLE (About ±10 dB continuously variable)
Size (W.H.D)	215 x 132 x 429 mm, 8 1/2 x 5 1/4 x 16 7/8 Inch
Weight	7.9 kg, 17.42 lbs.

Available until supplies last

Lissajous Display of Stereo Audio Signals

MULTI FORMAT VIDEO GENERATOR MAINFRAME

LT 443D

LEADER

CE
Upon request

Multi Format Video Generator Mainframe

The LT 443D Signal Generator can be flexibly used for the multiformat digital broadcast systems. Various plug-in units enable the output of SDI signals (i.e., HDTV, SDTV), sync signals, and analog signals. By using these signals and genlock functions, users can customize this signal generator as desired.

FEATURES

- **Plug-in units provide various functions**
  Since up to four plug-in units can be installed in the mainframe (consisting of a power supply, main signal generator, and controller), users can customize this signal generator as desired.
  *1 The plug-in unit is installed at the factory; user cannnot replace the unit.
- **Applicable to multiformat HDTV**
  For the SDI signals, 14 HDTV format unit and 525 line/625 line SDTV unit are provided. The NTSC/PAL analog video signal unit is also available.
  Since each unit can output the signal simultaneously, a multiformat system can be constructed to satisfy user's requirements.
- **Various sync output**
  Two units can simultaneously output HD signals with 74.25 MHz clock and 74.25/1.001 MHz clock.
- **Easy-to-use sync signals**
  For today's modern age of digital TV systems, BB signal (for NTSC/PAL) and HDTV tri-level sync signals can be generated from the Analog BB Unit.
- **Ethernet provided**
  Since the ethernet capability is provided as standard. This feature can remotely control various functions and monitor the genlock status.
- **User-friendly operability**
  Leader's traditional design and operability concepts are also reflected in this instrument. User-friendly operation includes significantly reduced power-on initialization time is advantageous to a high-performance instrument.
- **Reading logo mark data**

■OPTION

LT 443D-70 (NATURAL Picture Memory: Option 70)

This option adds the NATURAL picture pattern output capability to the LT 443D mainframe.
A compact flash memory card is used as an additional memory to store the NATURAL picture pattern.

LT 443D SPECIFICATIONS

Compartment	
Number of compartments	4
ID Function	Automatically identifies the unit installed. *2 Refer to specifications of each unit.
LCD Panel	
Number of Characters	20 characters x 2 lines can be displayed (W/backlight)
Internal Clock	
Internal Reference Frequency	27 MHz
Memory Card Slot	
Applicable Card	Compact flash memory card (CFA TYPE-1) *3
Function	Storing/reading preset data Reading logo mark data Reading NATURAL PICTURE data *4
	*3 No compact flash memory card is supplied as standard accessory. Memory cards produced by following manufacturers should be procured (as of August 2002):SanDisk
	*4 The NATURAL picture function is only usable when the LT 443D-70 Option is installed in the mainframe.
External Interface	
Ethernet	10Base-T/100 Base-T (Automatic selection)
USB (Universal Serial Bus)	Applicable to USB 1.1 This function will be supported.
General Specifications	
Environmental Conditions	
Operating Temperature Range	0 to 40 ˚C
Operating Humidity Range	≤ 90% RH (without condensation)
Spec-Guaranteed Temperature Range	10 to 35 ˚C
Spec-Guaranteed Humidity Range	≤ 85% RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2000 m
Overvoltage Category	II
Pollution Degree	2
Power Requirements	90 to 250 VAC, 50/60 Hz
Power Consumption	Approx. 150 W max. (Approx. 75 W max. *5)
Dimensions and Weight	426 (W) x 44 (H) x 560 (D) mm, Approx. 7 kg *5 *5 When four plug-in units (i.e., LT 443D-HD, LT 443D-SD, LT 443D-BL, LT 443D-GL) are installed. 16 3/4 (W) x 1 3/4 (H) x 22 (D) Inch, 15.4 lbs.
Accessories	Power cord.....1 Cover/Inlet stopper.....1 Rack Support (right and Left).....1 Screw (for rack support).....4 Rubber Feet.....5 Logo Mark Software CD-R.....1 Instruction manual.....1

LT 443D-AA ANALOG AUDIO UNIT

Plug-In Unit For LT 443D

Installing the LT 443D-AA Analog Audio Unit in the LT 443D mainframe can output analog audio signal (two systems).
Output characteristics (e.g., output level, frequency) can be independently set for each output system.
The sound sampling frequency is synchronized with the video signal of plug-in unit installed in the mainframe.

Output	
• Number of Outputs	2
• Output Impedance	600 Ω, balanced
• Output Amplitude	0.775 Vrms (into 600 Ω at 0 dBm)
• Output Amplitude Accuracy	±0.5 dB (at 1 kHz)
• Output Amplitude Flatness	±0.5 dB (1 kHz ref.)
• Output Connector	XLR-3P x 2
Function	
• Sampling Frequency	48 kHz (Sync to video signal)
• Frequency	50, 100, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1.0 k, 1.2 k, 1.5 k, 1.6 k, 2.0 k, 2.4 k, 3.0 k, 3.2 k, 4.0 k, 4.8 k, 5.0 k, 6.0 k, 8.0 k, 9.6 k, 10 k, 12 k, 15 k, 16 k, 20 kHz, silence
• Level	-40 to 4 dBm (settable in 1 dBm steps)

LT 443D-DA DIGITAL AUDIO UNIT

Plug-In Unit For LT 443D

Installing the LT 443D-DA Digital Audio Unit in the LT 443D mainframe can output AES/EBU digital audio signals (four systems), silence signals (one system), and 48 kHz word clock signals.
The AES/EBU signal characteristics (e.g., output level, frequency) can be independently set for each output system.
The sampling frequency is synchronized with the video signal of plug-in unit installed in the mainframe.

Output	
• AES/EBU Digital Audio Output	
Number of Outputs	4 (2-channel output)
Output Amplitude	1 Vp-p ±0.1 V (into 75 Ω)
Output Connector	BNC
• Silence Signal (DARS grade 2) Output	
Number of Outputs	1 (2-channel output)
Output Amplitude	1 Vp-p ±0.1 V (into 75 Ω)
Output Connector	BNC
• 48 kHz Word Clock	
Number of Outputs	1
Output Amplitude	1 Vp-p ±0.1 V (into 75 Ω), 5 V CMOS, selectable
Output Connector	BNC
Signal Specifications	
• Specifications	ANSI S4.40 (AES3-1992), AES 11-1997 SMPTE 276M, AES-3id-2001
Function	
• Sampling Frequency	48 kHz (sync to video signal)
• Resolution	20 bits, 24 bits, selectable
• Preemphasis	OFF, 50/15 µs, CCITT, selectable (CS bit can only be selected.)
• Frequency	50, 100, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1.0 k, 1.2 k, 1.5 k, 1.6 k, 2.0 k, 2.4 k, 3.0 k, 3.2 k, 4.0 k, 4.8 k, 5.0 k, 6.0 k, 8.0 k, 9.6 k, 10 k, 12 k, 15 k, 16 k, 20 kHz, silence
• Level	-60 to 0 dBFS (settable in 1 dB steps)
• Audio Click	1, 2, 3, 4 sec, none
• Output ON/OFF	Selectable
• Timing	
Variable Range	±1 AES/EBU frame Settable in 512 fs (24.576 MHz) steps *The timing can be varied with respect to the Video Unit installed in the LT 443D mainframe. The settings are common to the digital audio, silence and word clock signals. *Frequency, level, and audio click can be set to each channel. Other items (except timing) can be respectively set to the 2-channel output.

LT 443D-CS ANALOG COMPOSITE UNIT

Plug-In Unit For LT 443D

The LT 443D-CS Analog Composite Unit adds the NTSC/PAL analog composite signal output capability to the LT 443D mainframe. Various functions (e.g., ID character, simple motion pictures, embedded audio, NATURAL picture pattern *1) are provided.
*1: The NATURAL picture function is only usable when the Option LT 443D-70 is installed in the mainframe.

Test Signal Output	
• Format	NTSC, NTSC+REFERENCE *2, NTSC+ID *3, NTSC+REFERENCE+ID *2 *3, NTSC+SETUP, NTSC+SETUP+REF *2, NTSC+SETUP+ID *3, NTSC+SETUP+REF+ID *2 *3, PAL *4, PAL+REFERENCE *4 *2 *2 REFERENCE and REF denote Field Reference. *3 ID denotes 10 field ID. *4 The 25-Hz offset subcarrier is used for the PAL system.
• Pattern	COLOR BAR 100%, COLOR BAR 75%, EBU COLOR BAR, BBC COLOR BAR, SMPTE COLOR BAR, FLAT FIELD 100%, FLAT FIELD 50%, FLAT FIELD 0%, CROSSHATCH 1, CROSSHATCH 2, LINE SWEEP 100%, LINE SWEEP 60%, MULTIBURST 100%, MULTIBURST 60%, SHALLOW RAMP, 10 STEP, MOD 10 STEP, RAMP, MOD RAMP, MONOSCOPE, RED RASTER, WINDOW, PULSE & BAR
• NATURAL Picture *5	Up to five screens of 24-bit full color BMP file can be simultaneously switched.
• APL	
MODE	APL OFF, APL HIGH, APL LOW, APL(BOUNCE), BOUNCE APL (BOUNCE) is switched at a preset time interval for APL HIGH and APL LOW. BOUNCE is switched at a preset time interval for FLAT FIELD 100 % and FLAT FIELD 0 %.
Time Interval	1 to 20 seconds (settable in one second steps)
• ID Charactor	
Number of Characters	Up to 20
Size	32 x 32 dots, 64 x64 dots, selectable
Display Position	Arbitrary position on the screen.
Blinking	OFF, 1 to 10 seconds (settable in one second steps)
• Simple Motion Picture Function	
Direction	8 directions (up, down, left, right, and combinations)
Speed	H: 0 to 256 dots in 4 dot steps V: 0 to 256 lines in 2 line steps (Pattern can be scrolled in field time steps.) *5 The Option LT 443D-70 should be installed in the mainframe to enable this function.
• Timing Variable	The timing of OUTPUT 1 and 2 can be varied simultaneously.
H-PHASE	Up to ±1 line-1 dot
V-PHASE	Up to ±1 frame-1 line
F-PHASE	NTSC:Up to ±5 frames PAL: UP to ±2 frames
• Number of Outputs	2
Black Signal Output	
• format	Depends on the test signal format. (Supports the field Reference and 10 field ID)
• Output Signal	Analog black burst
• Format	The timing of OUTPUT 1 and 2 can be varied simultaneously.
• Timing Variable	
H-PHASE	Up to ±1 line-1 dot
V-PHASE	Up to ±1 frame-1 line
F-PHASE	NTSC:Up to ±5 frames PAL: UP to ±2 frames
• Number of Outputs	2 Systems (one each)
• Signal Level	1 Vp-p (into 75 Ω)
Horizontal Drive Pluse Output	
• Format	Depends on the test signal format.
• Signal Level	2 Vp-p (into 75 Ω)
• Signal Polarity	Negative
• Timing Variable	
H-PHASE	Up to ±1 line-1 dot
• Number of Outputs	1
Vertical Drive Pluse Output	
• Format	Depends on the test signal format.
• Signal Level	2 Vp-p (into 75 Ω)
• Signal Polarity	Negative
• Timing Variable	
V-PHASE	Up to ±1 frame-1 line
• Number of Outputs	1

LT 443D-GLA GENLOCK UNIT

Plug-In Unit For LT 443D

This unit provides genlock capability to lock the LT 443D mainframe with the external reference signal, and three independent black signal generators.
The NTSC/PAL black burst signals, principal 20 types of HDTV analog tri-level sync signal formats, and 525p/625p analog sync signals can be used as an external reference signal.
The following black burst signal formats can be selected.
For NTSC/PAL system, black burst signal with field reference pulse is provided. For NTSC system, black burst with 10-field sequence identification conforming to the SMPTE 318M standards is provided.
The instrument continues operation since the flywheel mode is provided even if the external reference signal is accidentally removed in genlock mode. By logging the genlock status, the time can be obtained when the external reference signal is removed. The log information can be stored on the CF CARD.

The genlock timing can be adjusted for the entire color frame range when the NTSC/PAL black burst signal is applied; entire frame range when the HDTV analog tri-level sync signal is applied.
Three black burst signal output systems with selectable formats are available as follows:
For NTSC/PAL system, standard black burst signal and black burst signal with field reference pulse are provided. For NTSC system, 10-field black burst signal with ID conforming to the SMPTE 318M standards, 525p/625p analog sync signal, and HDTV analog tri-level sync signal are provided.
The format and output signal timing of each output can be respectively set.
The black signal timing can be adjusted for the entire color frame range when the NTSC/PAL black burst signal is applied; entire frame range when the HDTV analog tri-level sync signal is applied.

Genlock Function	
Loop-Through Input	
Input Configuration	BNC connector, 75 Ω loop-through
Return Loss	≥ 30 dB (0.3 MHz to 30 MHz)
Reference Input Signal	HDTV tri-level sync signal conforming to SMPTE 240M/274M/296M standards 525p/625p analog sync signal conforming to SMPTE 293M/ITU-R BT 1358 standards NTSC black burst signal conforming to EBU N14/SMPTE RP-154/SMPTE 170M/SMPTE 318M standards PAL black burst signal conforming to ITU-R BT. 470-6 standards
Reference Input Signal Level	
• HDTV	Positive polarity: 300 mV Negative polarity: -300 mV
• 525p/625p	-300 mV
• NTSC	-286 mV
• PAL	-300 mV
Operation Modes	AUTO and MANUAL modes are provided for selecting INT or EXT mode.
Genlock Timing Variable Range	
• H-PHASE (FINE)	Fine adjustment between the H-PHASE (COARSE) steps.
• H-PHASE (COARSE)	±1/2 line with respect to the input signal
• V-PHASE	±1 frame with respect to the input signal
• F-PHASE	Up to ±5 frames with respect to the input signal. (Variable range depends on the input signal format.)
Analog Sync Signal Output	
BLACK 1/BLACK 2/BLACK 3 Output Format	HDTV tri-level sync signal conforming to SMPTE 240M/274M/296M standards 525p/625p analog sync signal conforming to SMPTE 293M/ITU-R BT 1358 standards NTSC black burst signal conforming to EBU N14/SMPTE RP-154/SMPTE 170M/SMPTE 318M standards PAL black burst signal conforming to ITU-R BT. 470-6 standards
Sync Level (into 75 Ω)	
• HDTV	Positive polarity: 300 mV ±6 mV Negative polarity: -300 mV ±6 mV
• 525p	-300 mV ±6 mV
• 625p	-300 mV ±6 mV
• NTSC	40 IRE ±1 IRE
• PAL	-300 mV ±6 mV
Rise and fall times	
• HDTV	54 ns ±20 ns
• 525p	70 ns ±10 ns
• 625p	100 ns ±10 ns
• NTSC	140 ns ±10 ns
• PAL	200 ns ±10 ns
Horizontal Sync Width	
• 1125-Line Format	Positive polarity: 593 ns ±40 ns Negative polarity: 593 ns ±40 ns
• 750-Line Format	Positive polarity: 539 ns ±40 ns Negative polarity: 539 ns ±40 ns
• 525p	2.35 µs ±0.05 µs
• 625p	2.35 µs ±0.1 µs
• NTSC/PAL	4.7 µs ±0.1 µs
Vertical Sync Width	5H (HDTV) / 6H (525p) / 5H (625p) / 3H (NTSC) / 2.5H (PAL)
Output Connector	BNC
Number of Outputs	1 each
Timing Variable Range	
• H-PHASE	Up to ±1 line-1 dot
• V-PHASE	Up to ±1 frame-1 line
• F-PHASE	Up to ±5 frames (depends on the input signal format.)

LT 443D-BL ANALOG BLACK UNIT

Plug-In Unit For LT 443D

The LT 443D-BL Analog Black Signal Unit adds the 20 HDTV format analog tri-level sync signal, 525p/625p analog sync signals, and NTSC/PAL black burst signals output capability to the LT 443D mainframe.
Three independent output systems (six outputs, two outputs per system) are provided to output multiformat black sync signal.
The format and output signal timing can be respectively set each output.

The ten-field black signal with ID conforming to the SMPTE 318M standards is also available.
The entire range of timing can be set for the 525p/625p analog sync signals and NTSC/PAL black burst signals in 54 MHz clock steps. The entire range of timing can also be set for the HDTV analog tri-level sync signal in 74.25 MHz or 74.25/1.001 MHz clock steps.

Analog Sync Signal Output	
BLACK 1, 2/BLACK 3, 4/BLACK 5, 6 Format	HDTV tri-level sync signal conforming to SMPTE 240M/274M/296M standards 525p/625p analog sync signal conforming to SMPTE 293M/ITU-R BT 1358 standards NTSC black burst signal conforming to SMPTE RP-154/SMPTE 170M/SMPTE 318M standards PAL black burst signal conforming to ITU-R BT. 470-6 standards
Sync Level (into 75 Ω)	
• HDTV	Positive polarity: 300 mV ±6 mV Negative polarity: -300 mV ±6 mV
• 525p	-300 mV ±6 mV
• 625p	-300 mV ±6 mV
• NTSC	40 IRE ±1 IRE
• PAL	-300 mV ±6 mV
Rise and fall times	
• HDTV	54 ns ±20 ns
• 525p	70 ns ±10 ns
• 625p	100 ns ±10 ns
• NTSC	140 ns ±10 ns
• PAL	200 ns ±10 ns
Horizontal Sync Width	
• 1125-Line	Positive polarity: 593 ns ±40 ns Negative polarity: 593 ns ±40 ns
• 750-Line	Positive polarity: 539 ns ±40 ns Negative polarity: 539 ns ±40 ns
• 525p	2.35 µs ±0.05 µs
• 625p	2.35 µs ±0.05 µs
• NTSC/PAL	4.7 µs ±0.1 µs
Vertical Sync Width	5H (HDTV) / 6 H (525p) / 5H (625p) / 3H (NTSC) / 2.5H (PAL)
Output Connector	BNC (BLACK 1, 2/BLACK 3, 4/BLACK 5, 6)
Number of Outputs	2 each
Timing Variable Range	
• H-PHASE	Up to ±1 line-1 dot
• V-PHASE	Up to ±1 frame-1 line
• F-PHASE	Up to ±5 frames (depends on the input signal format.)

LT 443D-HD HD-SDI UNIT/LT 443D-HDB (HD-SDI Out x 2, HD-SDI Black Out x 2) UNIT

Plug-In Unit For LT 443D

The LT 443D-HD HD-SDI Unit adds the 14 format HD-SDI signal output capability to the LT 443D mainframe. Various functions (e.g., ID character, simple motion pictures, embedded audio, NATURAL picture pattern*) are provided.
*The NATURAL picture function is only usable when the LT 443D-70 Option is installed in the mainframe.

Output	
• HD-SDI Video Output	1 system, 2 outputs (75 Ω, BNC)
Specifications	
• Specifications	Conforms to SMPTE 240M(Except for Return Loss) /274M/296M standards
SDI Characteristics	
• Bit Rate	1.485 Gbps, 1.485/1.001 Gbps
• Output Amplitude	800 mVp-p ±10%
• Overshoot	≤ 10 %
• Rise and Fall Time	≤ 270 ps (20 % to 80 %)
• Return Loss	≥ 15 dB (5 MHz to 742.5 MHz) ≥ 10 dB (742.5 MHz to 1.485 GHz)
Function	
• Applicable Format	1035i/60, 1035i/59.94, 1080i/60, 1080i/59.94, 1080i/50, 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98, 1080PsF/24, 1080PsF/23.98, 720p/60, 720p/59.94 The following formats will be supported: 720p/29.97, 720p/24, 720p/23.98, 720p/50, 720p/30, 720p/25
• Test Patterns	COLOR BAR 100 %, COLOR BAR 75 %, MULTIFORMAT COLOR BAR (ARIB STD-B28) FLAT FIELD 100 %, FLAT FIELD 50 %, FLAT FIELD 0 %, LINE SWEEP 100 %, MULTI BURST 100 %, BOWTIE 100 %, RAMP, SHALLOW RAMP, 10 STEP, PULSE & BAR, CHECK FIELD, RED RASTER 100 %, CROSS & DOT, MONOSCOPE
• Variable Timing	
Variable Range	Entire frame range
Variable In V	Line steps
H	Clock steps (74.25 MHz or 74.25/1.001 MHz)
• Simple Motion Picture Mode (Scroll)	
Direction	8 directions (vertical, horizontal, diagonal)
Speed (Range, Resolution)	
Field Frame Interlace	Variable in field steps
V Interlace	0 to 256 lines in 2 line steps
H Common	0 to 256 dots in 4 dot steps
• ID Character	ID characters can be displayed at the arbitrary position on the screen.
• Embedded Audio	
Number of Channels Embedded	8 channels (4 channels x 2 groups) Each group can be set ON/OFF
Sampling Frequency	48 kHz (sync to video signal)
Resolution	20 bits, 24 bits, selectable
Preemphasis	OFF, 50/15 µs, CCITT, selectable (CS bit is only selected.)
Frame Number	None
Frequency	50, 100, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1.0 k, 1.2 k, 1.5 k, 1.6 k, 2.0 k, 2.4 k, 3.0 k, 3.2 k, 4.0 k, 4.8 k, 5.0 k, 6.0 k, 8.0 k, 9.6 k, 10 k, 12 k, 15 k, 16 k, 20 kHz, silence
Level	-60 to 0 dBFS (settable in 1 dB steps) *Frequency, level, and audio click can be set to each channel. *When the CHECK FIELD pattern is selected, no audio signal is embedded.

LT 443D-SD SD-SDI UNIT/LT 443D-SDB (SD-SDI Out x 2, SD-SDI Black Out x 2) UNIT

Plug-In Unit For LT 443D

The LT 443D-SD SD-SDI Unit adds the 525/625 line format SD-SDI signal (4:2:2 component signal) output capability to the LT 443D mainframe. Various functions (e.g., ID character, simple motion pictures, embedded audio, NATURAL picture pattern*) are provided.
*1: The NATURAL picture function is only usable when the LT 443D-70 Option is installed in the mainframe.

Output	
• SD-SDI Video Output	1 system, 2 outputs (75 Ω, BNC)
Specifications	
• Specifications	Conforms to ITU-R BT. 601, SMPTE 125M standards Conforms to ITU-R BT. 656, SMPTE 259M standards
SDI Characteristics	
• Bit Rate	270 Mbps
• Output Amplitude	800 mVp-p ±10 %
• Overshoot	≤ 10 %
• Rise and Fall Time	0.4 to 1.5 ns (20 % to 80 %)
• Return Loss	≥ 15 dB (5 MHz to 270 MHz)
Function	
• Applicable Format	525i/59.94-270 MHz, 625i/50-270 MHz
• Test Patterns	COLOR BAR 100%, COLOR BAR 75%, EBU COLOR BAR, BBC COLOR BAR, SMPTE COLOR BAR, RAMP & COLOR, FLAT FIELD 100%, FLAT FIELD 50%, FLAT FIELD 0%, FIELD ID, CROSSHATCH, LINE SWEEP 100%, LINE SWEEP 60%, MULTIBURST 100%, MULTI-BURST 60%, OVER SIZE RAMP, DIGITAL LIMIT RAMP, SHALLOW RAMP, 10 STEP, CHECK FIELD, MONOSCOPE, BOWTIE 100%, PULSE & BAR, RED RASTER, MULTIPULSE
• Variable Timing	
Variable Range	Entire frame range
Variable In V	Line steps
H	Clock steps (27 MHz)
• Simple Motion Picture Mode (Scroll)	
Direction	8 directions (vertical, horizontal, diagonal)
Speed (Range, Resolution)	
Field Frame	Variable in field steps
V	0 to 256 lines in 2 line steps
H	0 to 256 dots in 4 dot steps
• ID Characters	
Number of Characters	Up to 20
Size	32 x 32 dots, 64 x 64 dots, selectable
• Embedded Audio	
Number of Channels Embedded	8 channels (4 channels x 2 groups) Each group can be set ON/OFF respectively.
Sampling Frequency	48 kHz (sync to video signal)
Resolution	20 bits, 24 bits, selectable
Preemphasis	OFF, 50/15 µs, CCITT, selectable(CS bit is only selected.)
Frame Number	ON/OFF, selectable
Frequency	50, 100, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1.0 k, 1.2 k, 1.5 k, 1.6 k, 2.0 k, 2.4 k, 3.0 k, 3.2 k, 4.0 k, 4.8 k, 5.0 k, 6.0 k, 8.0 k, 9.6 k, 10 k, 12 k, 15 k, 16 k, 20 kHz, silence
Level	-60 to 0 dBFS (settable in 1 dB steps) * Frequency, level, and audio click can be set to each channel. * When the CHECK FIELD pattern is selected, no audio signal is embedded.

MULTI FORMAT VIDEO GENERATOR

LT 4400

LEADER

HD-SDI

SD-SDI

CE
Upon request

Multi Format Video Generator

The compact, 1U half-rack sized, LT 4400 Multiformat Video Generator is applicable to both HD-SDI and SD-SDI systems.
The various output capabilities are provided: color bar, SDI check field test pattern, ID characters, logomark in QVGA size, safety-area marker, superimposing embedded audio, genlock mode to synchronize external reference signal, and three independent analog black signal systems.

FEATURES

- **Applicable to both HD-SDI and SD-SDI systems**
  Applicable to both HDTV (18 types of HDTV formats) and SDTV (525i/59.94, 625i/50) systems. The HDTV or SDTV can be selected.
- **Superimposing ID characters**
  The ID characters can be superimposed at the arbitrary position on the screen. The character blinks to indicate the freeze status.
- **Superimposing logomark**
  A logomark up to 320 (pixel) x 240 (line) in QVGA size can be superimposed at an arbitrary position on the screen. The logomark is converted from the bit map to four-grade monochrome data.
- **Safety-area marker**
  The 90 % and 80 % safety-area markers can be superimposed on the screen.
  The 4:3 aspect-ratio marker can also be superimposed in HDTV format.
- **Superimposing embedded audio**
  The 16 channels of embedded audio signals (4 channels x 4 groups) can be superimposed. The frequency and level can be respectively set for each channel.
- **Genlock mode**
  This instrument can be locked by a NTSC/PAL black burst or HDTV tri-level sync signals for variable timing. The NTSC/PAL black burst signals with field reference pulse signal, and NTSC/PAL black burst signal with 10-field ID are also applicable.
- **Stay-in sync function**
  This function ensures the stable operation in genlock mode even when the external reference signal is accidentally intermitent.
- **Analog black signal output**
  Three independent analog black signal output systems are provided. The black burst signal with the same format as the SDI output, or HDTV tri-level sync signal with the same format of clock frequency can be selected for variable timing. The NTSC/PAL black burst signals with field reference pulse signal, and NTSC black burst signal with 10-field ID are also applicable.
- **Pattern scroll (Simple motion picture mode)**
  The simple motion picture mode is provided to scroll the pattern.
- **Word clock output**
  The 48 kHz word clock output is provided to synchronize the audio signal.
- **Applicable to SNMP**
  The network system can easily be constructed since this instrument supports SNMP. (Not available currently)

■OPTION

OP70:FULL SIZE LOGO Option

Applicable to the LOGO MARK of a full screen
The Logo Mark of full screen size (up to 1920 x 1080 pixels) can be displayed.

SDI Output	
Number of Outputs	1 system, 2 outputs (75 Ω, BNC) HD-SDI/SD-SDI, selectable
Conform To	
HDTV	SMPTE 274M, SMPTE 296M, SMPTE 292M (except return loss)
SDTV	ITU-R BT 601, SMPTE 125M ITU-R BT 656, SMPTE 259M
Applicable Format	
HDTV	1080i/60, 1080i/59.94, 1080i/50, 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98, 1080PsF/24, 1080PsF/23.98, 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25, 720p/24, 720p/23.98
SDTV	525i/59.94-270 MHz, 625i/50-270 MHz
Timing Variable	
Variable Range	Entire frame range
Resolution	V: Settable in line steps H: Settable in clock steps (74.25 MHz, 74.25/1.001 MHz, 27 MHz)
Test Patterns	
HDTV	COLOR BAR 100 %, COLOR BAR 75 %, MULTIFORMAT COLOR BAR (ARIB STD-B28:75 % White, 100 % White, and + I signal, selectable), CHECK FIELD
SDTV	COLOR BAR 100 % (applicable to both 525i/59.94, 625i/50), COLOR BAR 75 %, SMPTE COLOR BAR (applicable to 525i/59.94), EBU COLOR BAR/BBC COLOR BAR (applicable to 625i/50), CHECK FIELD (applicable to both 525i/59.94, 625i/50)
Safety Area Marker	
HDTV	Action safety area (90 %), Title safety area (80 %) 4:3 aspect ratio Selectable ON/OFF individually
SDTV	Action safety area (90 %), Title safety area (80 %) Selectable ON/OFF individually
ID Characters	
Number of Characters	Up to 20 characters
Size	
HDTV	32x32/64x64/128x128 dots selectable
SDTV	32x32/64x64 dots selectable
Display Position	Displays at an arbitrary position on the screen.
Freeze Confirmation Display	Blinking OFF, 1 to 10 seconds
Logo Mark	
Logo Mark Data	4-level monochrome data between 0 and 3
Maximum Size	320(dot) x 240(line) (QVGA size)
Display Position	Displays at an arbitrary position on the screen
Display Level	Set arbitrary levels for levels 0 to 3
Display Method	Simultaneous display with the ID character
File Format	
Before Conversion	24-bit full-color bitmap data (.bmp) format
After Conversion	LT 4400/LT 443D dedicated (.lg) format
Conversion Color Matrix	Y = 0.212*R + 0.701*G + 0.087*B Converts 256-level monochrome data(Y) to four levels (level 0 to 3) using arbitrary threshold values.
Conversion Method	Converted using the logo mark conversion application.
Transferring the Logo Mark Data	Saves the data to a commercially sold Compact Flash card and inserts it to the LT 4400. *The data loaded from CF card to the LT 4400 cannot be held when the power is turned OFF.
Pattern Scroll (Simple Motion Picture Mode)	
Direction	8 directions (vertical, horizontal, diagonal)
Speed (Range, Resolution)	
Field and Frame	
Interlace	Variable in field steps
Others	Variable in frame steps
V Interlace	0 to 256 lines in 2 line steps
Others	0 to 256 lines in 1 line steps
H Common	0 to 256 dots in 4 line steps
Embedded Audio	
Number of Channels Embedded	16 Channels (4ch x 4group). Each group can be set ON/OFF
Sampling Frequency	48 kHz (sync to video signal)
Resolution	20 bits, 24 bits, selectable
Preemphasis	OFF, 50/15 ms, CCITT, selectable (CS bit can only be selected)
Frame Number	ON, OFF, selectable
Frequency	400 Hz /800 Hz /1 kHz, selectable (sets to each channel)
Level	Can be selected including silence (sets to each channel) -60 to 0 dBFS (settable in 1 dBFS steps)
Audio Click	1 sec/2 sec/3 sec/4 sec/OFF (sets to each channel) * When the CHECK FIELD pattern is selected, no audio signal is embedded. * In the SDTV format, resolution becomes 20 bits when the 16ch is output.

Genlock Function	
Reference Input Signal	
Input Configuration	BNC (75 Ω, loop through)
Input Signal	
NTSC black burst signal	EBU N14/SMPTE RP154/SMPTE 170M/SMPTE 318M
PAL black burst signal	ITU-R BT.470-6
HDTV tri-level sync signal	SMPTE 274M, SMPTE 296M
Sync Level	
NTSC black burst signal	-286 mV
PAL black burst signal	-300 mV
HDTV tri-level sync signal	±300 mV
Operating Input Level Range	± 6 dB
External Lock Range	± 10 ppm
Jitter	
Burst Lock Mode	≤ 0.5 °
Sync Lock Mode	≤ 1 ns
Operation Modes	
INTERNAL	Internal reference signal is used for operation. (INT mode)
AUTO (GO INTERNAL)	
	The EXT is automatically selected when the external reference signal is applied to the GENLOCK input. The INT mode is automatically selected when the external reference signal is removed.
MANUAL (GO INT)	
	The EXT mode is automatically selected when the external reference signal with the same format specified to the GENLOCK input is applied after power is turned on. The INT mode is automatically selected when no external reference signal is applied to the GENLOCK input or signal format does not match the specified format.
AUTO (STAYinSYNC)	
	The EXT mode is automatically selected when the external reference signal is applied to the GENLOCK input after power is turned on. If the external reference signal is accidentally removed during operation, the instrument continues operation under the conditions immediately before the signal is removed since STAYinSYNC mode is provided. After the external reference signal is recovered, the system is automatically locked.
MANUAL (STAYinSYNC)	
	The EXT mode is automatically selected when the external reference signal with the same format specified to the GENLOCK input is applied after power is turned on. If the external reference signal is accidentally removed during operation, the instrument continues operation under the conditions immediately before the signal is removed since STAYinSYNC mode is provided. The STAYinSYNC mode will be held until the reset operation is performed via the front panel even after the external reference signal is recovered.
Genlock Timing	
Variable Range	
NTSC black burst signal	± 5 frames
PAL black burst signal	± 2 frames
HDTV tri-level sync signal	1 frame (entire frame range)
Resolution	
H	0.0741 µs steps (13.5 MHz clock steps)
V	1 line steps
F	1 frame steps
Reference Point (at the time of the black burst input)	
NTSC	The phase coincident point of line 4 of the NTSC and line 1 of the HDTV
PAL	The phase coincident point of line 1 of the PAL and line 1 of the HDTV
Analog Sync Signal Output	
Format	
NTSC black burst signal	EBU N14, SMPTE RP154, SMPTE 170M, SMPTE 318M
HDTV tri-level sync	SMPTE 274M, SMPTE 296M
Output Signal	
Number of Outputs	6 Outputs (three output systems which equip with two connectors each)
Setting Output Format	Settable
Output Connector	
Output Connector	BNC
Output Timing	
Setting	Three systems can be set individually.
Variable Range	
NTSC black burst signal	± 5 frames
PAL black burst signal	± 2 frames
HDTV tri-level sync	1 frame (entire frame range)
Setting Resolution	
NTSC black burst signal	0.0185 µs steps (54 MHz in clock steps)
HDTV tri-level sync	0.0135 µs steps (74.25/1.001 MHz in clock steps, or 74.25 MHz in clock steps)
Word Clock Output	
Frequency	48 kHz
Output Amplitude	1 Vp-p ± 0.1 V (into 75 Ω), or 5 V CMOS, selectable
Output Connector	BNC
Number of Outputs	1
Timing Variable	
Variable Range	± 1 AES/EBU frame
Setting Resolution	512 fs (24.576 MHz) steps
Memory Card Slot	
Function	Storing/reading preset data Reading logo data
Ethernet Connector	
Type	10BASE-T/100BASE-TX, auto switching
Function	Transferring operation status (e.g., genlock status) Remote control (e.g., pattern switching) SNMP supported (to be supported in the future)
LCD Panel	
Number of Characters	20 characters x 2 lines can be displayed (w/backlight)
Environmental Conditions	
Operating Temperature Range	0 to 40 °C
Operating Humidity Range	≤ 85 % RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2000 m
Overvoltage Category	I
Pollution Degree	2
Power Requirements	DC12 V (10 to 18 V) 20 W
Dimensions and Weight	213(W) x 44(H) x 400(D) mm (excluding projections), 1.8 kg 8 3/8(W) x 1 3/4(H) x 15 4/5(D) inch, 4 lbs.
Accessories	AC adapter.....1 Instruction manual 1

AUTO CHANGEOVER

LT4441/LT 4442/LT444/LT 4440

LEADER

New
(LT4441/LT 4442)

CE
Upon request
(LT444/LT 4440)

Changeover

The units in the changeover series automatically switch the signal from the primary signal to the backup signal when problems are detected in the primary signal. Two input signals (primary and backup) are connected to a changeover unit, and the unit detects errors in the amplitude of the primary input signal.
A single unit provides 11 channels. Depending on the configuration of the internal switches, SDI, AES/EBU digital audio, analog black burst, tri-level sync, and word-clock signals can be received by the channels.
When a unit switches from a primary signal to a backup signal, it lights the panel LED of the channel that is causing the problem. The LT 4441 and LT 444 can be combined with the LT 443D Multiformat Video Generator to form a system. The LT 4442 and LT 4441 can be combined with the LT 4400 Multiformat Video Generator to form a system that is 2U in size.

FEATURES

- **Inputs and Outputs**
  Each unit is equipped with 11 sets of channels (each set consists of a primary input, a backup input, and an output).
- **Electronic Switches (LT 4441 and LT 4442)**
  Electronic switches are used to switch channels 4 to 11. Also, high-speed detection circuits are used to detect errors. These enable units to switch to a backup signal with barely any disturbances appearing on the screen when problems such as interruptions occur in a primary signal.
  The channel 9 and 10 inputs are dedicated inputs for AES/EBU digital audio signals. The channel 11 input is a dedicated input for word-clock signals. With TTL input, units generate +5 V CMOS output.
- **Time until Determination Starts**
  The delay for starting the error monitoring at power up can be set to FAST or SLOW depending on the rise time of the system signal source that a unit is connected to.
- **Determination Criteria of the Signal Level**
  By using the internal preset switches, you can switch between the level detection of SDI, NTSC or PAL analog black burst, and HD analog tri-level sync signals. AES/EBU digital audio and word-clock signals (on the LT 4441 and LT 4442) are received through dedicated connectors.
- **Error Display**
  When a signal level error is detected, the unit lights the error LED on the panel as well as an LED that indicates the channel that is causing the problem. This feature allows quick investigation of the problem.

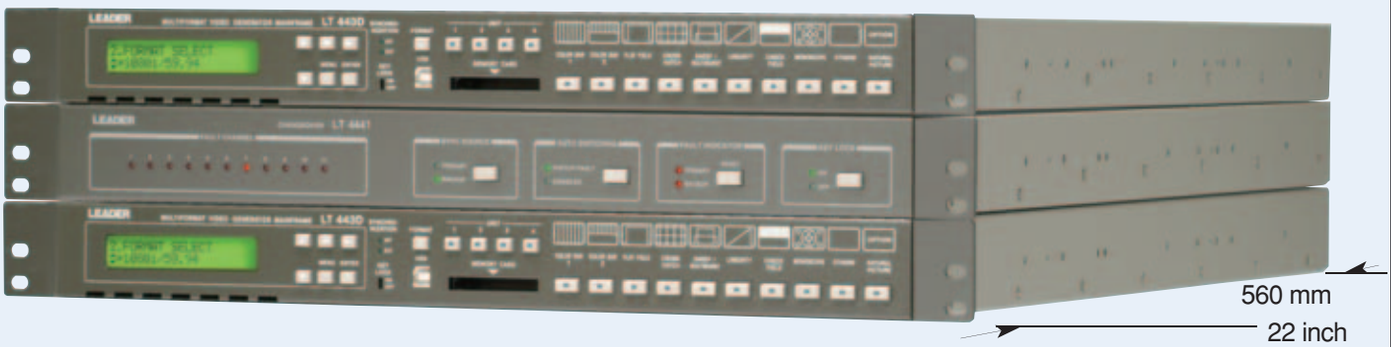
SPECIFICATIONS

	LT 4441	LT 4442	LT 444	LT 4440
Inputs	10 input connectors 1 input connectors (TTL input)		1 input each for 11 connectors	
Outputs	10 output connectors 1 output connectors (CMOS)		1 output each for 11 connectors	
Dimensions	560 mm, 22 in.	400 mm, 15 5/4 in.	560 mm, 22 in.	400 mm, 15 5/4 in.
Switch	CH1 to CH3 : Relay Switches CH4 to CH11 : Electronic Switches		Relay Switches	
Inputs and Outputs Characteristics	CH1 to CH3 HD-SDI, SD-SDI, NTSC/PAL Analog black burst, HD Tri-level sync signal CH4 to CH8 NTSC/PAL Analog black burst, HD Tri-level sync signal CH9, CH10 AES/EBU Digital Audio CH11 Word clock (TTL)		CH1 to CH11 SD-SDI NTSC/PAL Analog black burst HD Tri-level sync signal AES/EBU Digital Audio CH1 to CH6 HD-SDI	

Error Display **Total Error LED** **Error Channel LED**	Notifies errors by illuminating the error LED on the panel. Detects the channel causing the error and shows the channel by illuminating the corresponding LED.
Panel Key Lock **Time to Key Lock**	The key lock is automatically enabled when key operation is not detected for 60 s.
External Control (REMOTE) Connector **Application** **Connector Type**	For external remote control. 9-pin Dsub connector
Dimensions and Weight	426 (W) x 44 (H) x 560 (D) mm(LT 444/LT 4441) 426 (W) x 44 (H) x 400 (D) mm(LT 4440/LT 4442) (excluding protrusions), 4 kg 16 3/4 (W) x 1 3/4 (H) x 22 (D) inch, (LT 444/LT 4441) 16 3/4 (W) x 1 3/4 (H) x 15 4/5 (D) inch, (LT 4440/LT 4442) (excluding protrusions), 8.8 lbs
Accessories	Rack supports ·····2 Rack support attachment screws ·····4 Power cord·····1 Instruction manual ·····1

Dimension

Deeper Cabinet



The LT 4441/LT444 can be configured in the system with the LT443D

Short Cabinet

The LT 4442/LT 4440 can be configured in the system with the LT4400

REAR PANEL

LT 4441/LT 4442

LT 444/LT 4440

NTSC SYNC GENERATOR

410BB

LEADER

NTSC Sync Generator

The 410BB is an NTSC Sync Generator that provides sync generator signals for other video equipment.

FEATURES

- **Provides six black outputs**
- **Provides composite sync and subcarrier outputs**
- **Provides SMPTE color bars output**
- **Digital waveform generation provides highly accurate and stable signals.**
- **Supplies two 1 kHz outputs of audio tone**
- **The low-profile rackmount size easily fits into system configuration**

410BB SPECIFICATIONS

Black Burst	
(1) System and other System	NTSC-M, conforms to SMPTE 170M standards
Number of Scanning Lines	525, interlaced
Field Frequency	59.94 Hz
Line Frequency	15.73426 kHz
Subcarrier Frequency	3.579545 MHz ±10 Hz
Output Impedance	75 Ω
Number of Outputs	6
(2) Sync Signal and Color Burst	
Sync Signal	
Amplitude	286 ±14.3 mV
Blanking Level	0 ±20 mV
Rise/Fall Times	140 ±20 ns
Horizontal Sync Pluse Width	4.7 µs±100 ns
Vertical Sync Pluse Width	3H
Equalizing Pluse Width	2.3 µs±100 ns
Vertical Serration Pluse Width	4.7 µs±100 ns
Virtical Blanking Period	20H +1.5 µs
Color Burst	
Amplitude	286 ±14.3 mVp-p
Number of Cycles	9
Rise/Fall Times	300+200 ns, or 300-100 ns
SCH Phase	±10 °

Composite Sync	
Amplitude	4±0.2 V into 75 Ω
Output Impedance	75 Ω
Polarity	Negative
Timing	±100 ns, compared with black burst
Rise/Fall Times	140±20 ns
Number of Outputs	1
Subcarrier	
Amplitude	2±0.2 Vp-p into 75 Ω
Output Impedance	75 Ω
Frequency	3.579545 MHz ±10 Hz
Phase	±10 °, compared with black burst
Number of Outputs	1
SMPTE Color Bar	
Specifications	Conforms to SMPTE ECR1-1978 standards.
Full Amplitude	1 Vp-p ±20 mVp-p into 75 Ω
Number of Outputs	2
Analog Audio Tone	
Frequency	1 kHz±100 Hz
Output Waveform	Sine Wave
Output Amplitude	0±0.5 dBm, or 4±0.5 dBm, selectable by internal switching
Output Impedance	600 Ω, balanced
Output Connector	XLR type (3-pin), cannon
Number of Outputs	2
Others	
Power Requirements	100, 120, 220, 240 VAC, 50/60 Hz, 20 Wmax. selectable by internal wiring
Size and Weight	426 (W) × 44 (H) × 400 (D) mm, 6 kg 16 3/4(W) × 1 3/4(H) × 15 4/5(D) Inch, 13.3 lbs.
Environmental Conditions	
Operating Temperature Range	0 to 40 °C
Operating Humidity Range	≤ 85 % RH(without condensation)
Storage	Temperature:-10 to 50 °C
Accessories	Rack support .....1 set Power cord.....1 Instruction manual 1

■410BB REAR PANEL

DIGITAL TV SIGNAL GENERATOR

LG 3850

SBTVD-T option | SATVD-T option | ISDB-T option | DVB option

New

- Ability to change the encoding software from a PC connected to the LG 3850 through USB
- Seamless output of still-image and audio patterns
- Variable levels and channels
- Ability to save 99 preset configurations in the internal memory

■ **OPTION**

• Software
LG 3850SER02 ISDB-T SOFTWARE
LG 3850SER04 DVB-T SOFTWARE*
*This function will be supported

Low-Cost, Compact Signal Generator for Digital Broadcasts

RF SIGNAL GENERATOR

LG 3810

SBTVD-T option | SATVD-T option | ISDB-T option | ATSC option | DVB option | CATV option

New

- All-in-One
- User-Selectable Digital Broadcast System
- Real-time MPEG-2 TS Encoding and Modulation
- HDD That Can Play Back Long Transport Streams
- External HDD and DVD Drive Connectability
- 100 Presets

■ **OPTION**

• Add-in software
LG 38SER02 ISDB-T MODULATOR
LG 38SER03 ATSC MODULATOR
LG 38SER04 DVB-T/H MODULATOR
LG 38SER05 CATV MODULATOR

RF Signal Generator for Digital Broadcasts

SIGNAL LEVEL METERS

LF 52 & LF 51

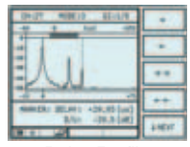
New

SBTVD-T | SATVD-T

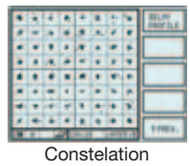
LF 52 Signal Level Meter Main Features

- Designed specifically for the ISDB-T terrestrial format now being implemented in South/Central America.
- Accepts 5MHz to 870MHz and 950MHz to 2.6GHz (Satellite)
- Supports both digital and analog transmission systems to aid in the analog to digital transition.
- Supports BPSK, QPSK, 8PSK, OFDM and 16 to 256QAM for CATV operation.
- Supports broadcast, cable and satellite operation.
- Measures RF level, C/N. BER, MER and DELAY PROFILE
- Provides Constellation display and Spectral Display
- Presets and measurement logs can be stored in Compact Flash card for ease of use and documentation purposes.
- Provides auto-channel search function for terrestrial and CATV.
- Remote control via RS232 serial interface.
- Lithium-Ion battery operation, battery and AC adaptor included.

LEVEL/BER/MER



Delay Profile



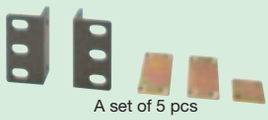
Constelation

System	Function	LF 52	LF 51
LCD		4" mono STN	4" mono STN
Terrestrial	Level	●	●
	BER	●	●
	MER	●	●
	C/N	●	●
	Constelation	●	●
	Delay profile	●	
	Spectrum display	●	●
CATV	Level	●	●
	BER	●	●
	MER	●	●
	Constelation	●	●
	Spectrum display	●	●
	Uplink	●	●
BS/CS	Level	●	●
	BER	●	●
	Level and BER Simultaneous Measurement	●	●
	MER	●	●
	C/N	●	●
	Constelation	●	●
	2600 MHz	●	●
Memory		● (CF)	● (CF)
Remote		● (RS232C)	
Battery		● (Lithium)	Sold separately (Lithium)
AC Adapter		●	Sold separately
Carrying case		●	●

OPTIONAL ACCESSORIES

LEADER

Rackmount adapter
LR 2477

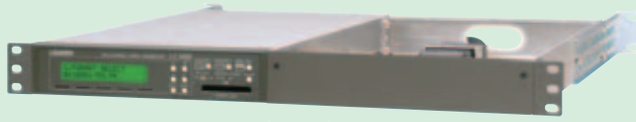


A set of 5 pcs

mount example

For
LT 4400

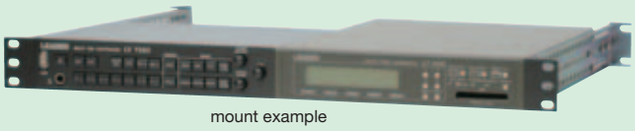
Rackmount adapter
LR 2480



mount example

For
LT 4400

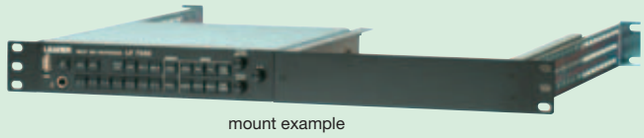
Rackmount adapter
LR 2478



mount example

For
LV 7330

Rackmount adapter
LR 2481



mount example

For
LV 7330

Rackmount adapter
LR 2751 I (4U size)

For
LV 5380

Blank Panel
LC 2129

For
LR 2751 I

Rackmount adapter
LR 2752 (3U size)

For
LV 5330

Blank Panel
LC 2130

For
LR 2752

Handle
LH 2140

mount example

For
LV 5380

AC Adapter
SPU40-105

For
LV 7330, LV 7380, LV 5380,
LV 5330, LT 4400, LV 5750

Metal Cabinet
LC 2126

For
LV 5750

Viewing Hood
LH 2139

For
LV 5750

Tripod Mounting Plate
LC 2127

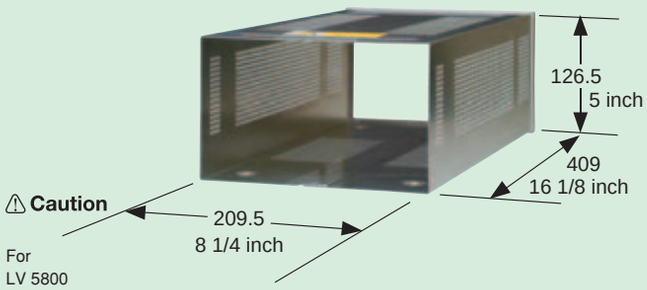
For
LV 5380, LV 5330, LV 5750

Front Cover
LC 2128

For
LV 5750

■ Cabinet

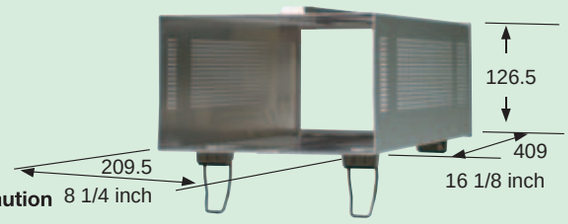
LR 2404A



For
LV 5800

■ Cabinet

LR 2427B

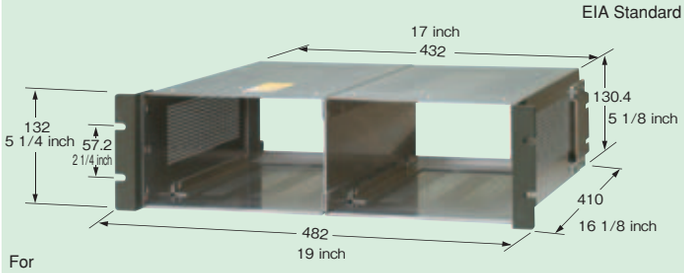


For
LV 5800

■ Rackmount adapter

LR 2700A I (3U size)

EIA Standard



For
LV 5800, LV 5750, 5385

■ Blank Panel

LC 2125A

For
LR 2700A I,
LR 2750 I

■ Rackmount Strage box

LR 2701

For
LR 2700A I

■ Rackmount adapter

LR 2750 I (3U size)

For
LV 5750

■ Illumination lamp

LI 2306 (A set of 5 pcs)

For
5835

Product Name	Model	Applicalle Model	Notes
Rackmount adapter	LR 2700A I	LV 5800, LV 5750, 5835	Two applicable models can be mounted in a 3U space on a 19-inch EIA rack.
Rackmount adapter	LR 2750 I	LV 5750	Two applicable models can be mounted in a 3U space on a 19-inch EIA rack.
Rackmount adapter	LR 2751 I	LV 5380	Two applicable models can be mounted in a 4U space on a 19-inch EIA rack. The adapter is equipped with a vertical tilt mechanism.
Rackmount adapter	LR 2752	LV 5330	
Rackmount adapter	LR 2477	LT 4400	Two applicable models can be mounted in a 1U space on a 19-inch EIA rack. There is no slide rail.
Rackmount adapter	LR 2478	LV 7330	Two LV 7330s or an LV 7330 and an LT 4400 can be mounted in a 1U space on a 19-inch EIA rack. It doesn't matter which side you install the different units on.
Rackmount adapter	LR 2480	LT 4400	One applicable model can be mounted in a 1U space on a 19-inch EIA rack. It doesn't matter which side you install the different units on.
Rackmount adapter	LR 2481	LV 7330	
Cabinet	LR 2404A	LV 5800	
Cabinet	LR 2427B		Comes with a carrying handle and tilt stand.
Rackmount Strage box	LR 2701	LR 2700A I	A storage box that can be attached to the LR 2700A I.
Blank Panel	LC 2125A	LR 2700A I, LR 2750 I	
Blank Panel	LC 2129	LR 2751 I	
Blank Panel	LC 2130	LR 2752	
Metal Cabinet	LC 2126	LV 5750	
Tripod Mounting Plate	LC 2127	LV 5750, LV 5330, LV 5380	An adapter for converting the tripod mounting screws to 3/8-16 UNC or VESA compliant (75 mm) screws
Front cover	LC 2128	LV 5750	
Viewing Hood	LH 2139	LV 5750	
Handle	LH 2140	LV 5380	
Illumination lamp	LI 2306	5835	A set of 5 pcs
AC adapter	SPU40-105	LV 5380, LV 5330, LT 4400, LV 5750, LV 7330, LV 7380	

⚠ **Caution** : Use a cabinet with the specified model number. If you use a cabinet that has not been specified, ventilation will not take place properly, and damage to the instrument, smoke emission, or fire may result.

SPECIFICATION CHANGES:

LEADER ELECTRONICS CORP. reserves the right to discontinue the sale of instruments and/or change the specifications of instruments at any time without responsibility for the incorporation of new features in the instruments already sold.

ENVIRONMENTAL CONDITIONS:

Our products can be used under the following conditions unless stated otherwise.
<Operating range>
1.Temperature: 0 to 40 ˚C
2.Humidity: 85 % RH (without condensation)

EU WEEE Directive

The EU WEEE Directive applies to this product and its accessories. When disposing of this product or its accessories, follow the regulations in your country or region.
(WEEE Directive: Waste Electrical and Electronic Equipment)

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