MULTI MONITOR

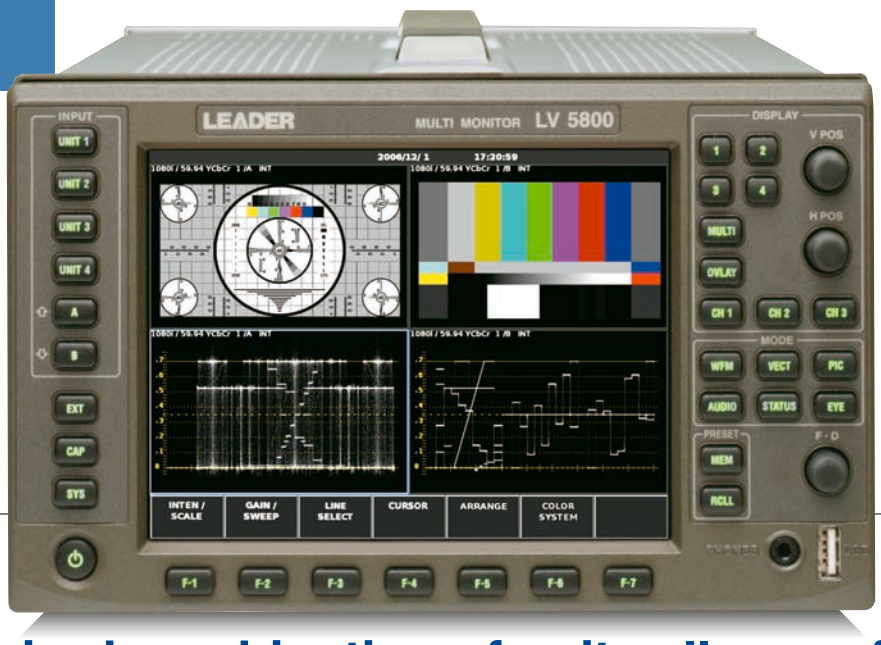
LV 5800

LEADER

CE
Upon request

RoHS

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



HD-SDI

SD-SDI

CINELITE II option

AFD Ready

PATENTED:
Equivalent cable length measurement

Your Desired combination of units allows a flexible waveform 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 four-waveform parade display on the waveform monitor is also supported.

FEATURES

- **Four Input Slots**
  Up to four input units can be inserted. Each input unit operates independently.
- **Two Output Slots**
  Up to two 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.

Unit List

- **LV 58SER01A** SDI INPUT
- **LV 58SER02** EYE PATTERN UNIT
- **LV 58SER03** COMPOSITE VIDEO UNIT
- **LV 58SER04** MPEG DECODER
- **LV 58SER20** DVI-I OUTPUT UNIT
- **LV 58SER40A** DIGITAL AUDIO

- **USB Connector**
  Screen captures, records of data, and presets can be stored by connecting a USB memory to the USB connector on the front panel.
- **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 5800 REAR PANEL

LV 58SER20/LV 58SER40A/LV 58SER02/LV 58SER01A x 2 for installation example

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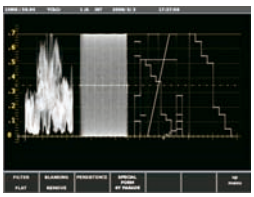
LV 5800 SPECIFICATIONS

LEADER

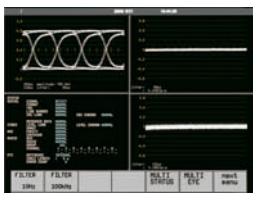
Slot	
Number of Slots for Input	4
Number of Slots for Output	2
LCD Display	
LCD Screen Type	6.3-inch TFT color
Display Format	XGA Effective area 1024 x 768 dots
Frame Frequency	59.94 MHz (The input signal and the display clock signal have not been synchronized.)
Backlight Brightness	Selects HIGH or LOW
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 Records 1 screen in the internal memory.
Media	Internal memory (RAM) or a USB memory
Format	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) in 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

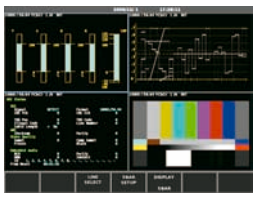
Multi



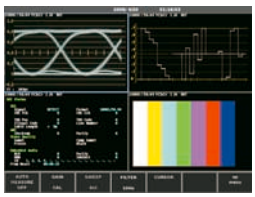
EX, LV 58SER01A 2 sets are installed



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



EX, LV 58SER01A 2 sets are installed

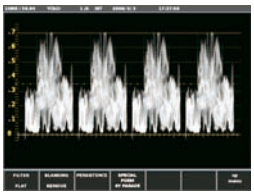


EX, LV 58SER01A/LV 58SER02 1 sets each are installed

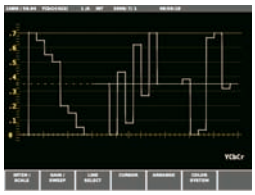
4 input Picture

EX, LV 58SER01A 2 set are installed

Wave form



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



EX, LV 58SER01A 1 set is installed

Vector

EX, LV 58SER01A 2 set are installed

Status

EX, LV 58SER01A 1 set is installed

Phase

EX, LV 58SER01A 1 set is installed

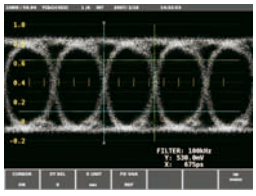
V-ANC

EX, LV 58SER01A 1 set is installed

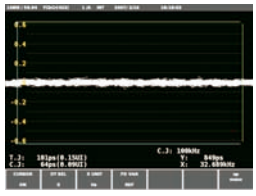
5 Bar

EX, LV 58SER01A 1 set is installed

EyePattern/Jitter

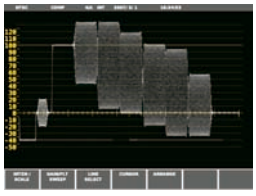


EX, LV 58SER02 1, LV 58SER 01A 1 set is installed



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

COMPOSITE

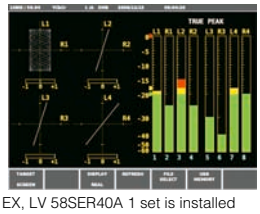


EX, LV 58SER03 1 set is installed

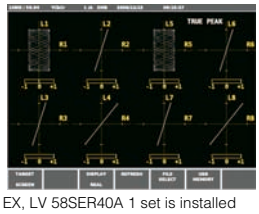
MPEG

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

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LV 5800 Platform Options

LEADER

LV 58SER01A SDI INPUT

Plug-In Unit for LV 5800

CINELITE II option

RoHS

This unit is an SDI input unit that installed in a LV 5800 input slot. The unit allows waveform display, picture display, and error detection of the SDI signal on the LV 5800. Combination with other optional units allows various displays such as the eye pattern display of the SDI signal (LV 58SER02) and the Lissajous and level displays of the embedded audio (LV 58SER40A).
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.

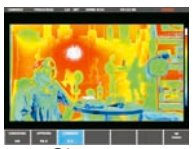
FEATURES

- **Two-Channel Serial Digital I/O**
  An SDI input unit contains two 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**
  Peak levels of video signals can be displayed in place of the vectors.
- **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**
- **Japanese Caption Display Function (to be supported in the future)**
- **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**

■OPTION

- **FS 3033 Cinelite II (Cinelite and Cinezone)**


Cinelite


Cinezone

LV 58SER01A SDI INPUT SPECIFICATIONS

Video Formats and Corresponding Standards
Single Link System Video Signal Corresponding Formats and Corresponding Standards

Format	Quantization	Scanning	Frame(Field) Frequency	Standard Supported
Y,C_B,C_R 4:2:2	10bit	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 RP211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/ 24/23.98	SMPTE 296M SMPTE 292M
		525	59.94	SMPTE 259M
		625	50	

Dual Link System Video Signal Corresponding Formats and Corresponding Standards

Format	Quantization	Scanning	Frame(Field) Frequency	Standard Supported
GBR 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	

Ancillary data standard	SMPTE 291M
Embedded audio standard	HD-SDI: SMPTE 299M SD-SDI: SMPTE 272M
Format Setting	Automatic setting
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
Input Impedance	75 Ω
Input Return Loss	15 dB or more 5 MHz to serial clock frequency
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. For single link A ch / B ch 2 systems For 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 Function	
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 (authorised by Tektronix, inc.)
Channel Assignment	Selects GBR order or RGB order for the GBR conversion display
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 x10
Amplitude Accuracy	±0.5 %
Frequency Response HDTV	
Y Signal	±0.5 % 1 MHz to 30 MHz
C_B, C_R Signal	±0.5 % 0.5 MHz to 15 MHz
Low-pass Attenuation	20 dB or more at 20 MHz
Frequency Response SDTV	
Y Signal	±0.5 % 1 MHz to 5.75 MHz
C_B, C_R Signal	±0.5 % 0.5 MHz to 2.75 MHz
Low-pass Attenuation	20 dB or more at 3.8 MHz
Horizontal Axis	
Line Display	
Display Format	Overlay: 1H, 2H Parade: 1H, 2H, 3H Timing: Y-C_B,Y-C_R 4Y Parade*1: 4H

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Magnification	Selects x1, x10, x20, ACTIVE, or BLANK *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.
Field Display	
Display Format	Overlay: 1V, 2V (2V display not allowed for progressive) Parade: 1V, 2V, 3V Magnification: x1, x20, x40
Time Base Accuracy	±0.5 %
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 x10
Amplitude Accuracy	±0.5 %
IQ Axis	Selects show or hide
Pseudo-Composite Display	Digitally converts component signals into composite signals and displays the result. (the color matrix for HDTV signal is converted into SDTV)
Image Quality Adjustment	Brightness adjustment
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 signal
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	On picture indication of gamut errors
Line Select	Displays the selected line as a marker
Image Quality Adjustment	GBR gain adjustment, Contrast adjustment, Brightness adjustment
Status Display	
Status Display of SDI Signal	
Signal Detection	Detects the presence or absence of SDI signals.
Format	Auto format Detection
Equivalent Cable Length Measurement	Converts the SDI signal attenuation into a coaxial cable length and displays the result.
Embedded Audio Channel	Displays the embedded audio channel number.
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.
Cable Length Meter Error	Detects the signal attenuation and displays the result.
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 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	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)
Freeze Detection	Detects video freeze
Black Detection	Detects blackouts of the video signal

Event Log	
Number of Logs	Error items, time stamps, etc.
5 Bar Display	
Bar Display	Displays the Y GBR component Gamut and composite Gamut
Analysis Function	
Data Dump Display	
Display Format	Displayed by serial data sequence or channel separation.
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	
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
Display Content	Analyzes and displays the Format ID.
Closed Caption Data Display	
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	
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	
Standard Supported	ARIB TR-B23
Arbitrary ANC Packet Display	
Method of Specifying ANC	Selects DID or SDID
Time Code Display	
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
Closed Caption Processing (future support)	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)
Power Consumption	Supplied from LV 5800 70 Wmax. (If one unit is installed to the LV 5800) 18 Wmax. (additional power consumption for each additional unit installed to the LV 5800)
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.

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LV 5800 Platform Options

LEADER

LV 58SER02 EYE PATTERN UNIT

Plug-In Unit for LV 5800

RoHS

This unit displays eye patterns. It is installed in a LV 5800 input slot. By combining with the LV 5800 input unit, eye pattern waveforms of SDI signals can be monitored. Automatic measurement of parameters such as amplitude, rise time, and fall time is also possible.

FEATURES

- **HD-SDI, SD-SDI Format Support**
- **6 Systems of Eye Pattern Displays and Jitter Measurement**
  Displays the SDI signal eye pattern or measures the jitter of one system among up to 6 systems by combining 3 SDI input units and selecting A or B among the three modules. (Two 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	
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.)
Power Consumption	Supplied from LV 5800 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 for LV 5800

New

RoHS

The LV 58SER03 provides the LV 5800 with two composite (NTSC/ PAL) inputs. The LV 5800's newest functions related to waveforms such as the waveform monitor, vectorscope, and simple picture monitor 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.

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.

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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	
Input Connector	Select A or B
Input Connector	BNC connector
Input Impedance	75 Ω
Input Return Loss	≥ 30 dB (up to 6 MHz)
Maximum Input Voltage	±5 V (DC + Peak AC)
Output	
Composite Video	
Output Signal	Active
Output Connector	BNC connector 1 system 1 connector
Output Impedance	75 Ω
Output Amplitude	1 Vp-p ± 5 %
Frequency Characteristics	± 5 % 25 Hz to 5 MHz +5 % to -10 % 5 MHz to 5.6 MHz
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 %
Frequency Characteristics	
Composite Signal	±2 % 25 Hz to 5 MHz +3 % to -7 % 5 MHz to 5.6 MHz
Step Response (for 1 V full scale, flat, 2T pulse, and 2T bar)	
Overshoot	±2 %
Preshoot	±1 %
Ringing	±2 %
Pulse/Bar Ratio	±1 %
Vertical Tilt	±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
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
General Specifications	
Environmental Conditions	Conforms to the LV 5800
Power Consumption	Supplied from the LV 5800 9 Wmax.
Weight	0.25 kg, 0.5 lbs
Accessories	Instruction manual 1
Picture Display	(Conforms to the LV 5800)
Line Selector	(Conforms to the LV 5800)
Cursor Measurement	(Conforms to the LV 5800)
Amplitude Measurement	Measure in terms of [IRE] or [V]
Screen Capture	(Conforms to the LV 5800)

LV 58SER04 MPEG DECODER

Plug-In Unit for LV 5800

New

RoHS

The LV 58SER04 is an input unit that receives MPEG-2 TS (DVB-ASI) signals and displays video/audio information on the LEADER LV 5800 (Multi Monitor). Because it contains an MPEG-2 video decoder and audio decoder, it can display the signal using the video signal waveform display, vectorscope display, picture display, and audio display. The LV 58SER04A can also be used to monitor errors defined by ETSI ETR-290, to display PAT and PMT data, and to display the TS bit rate and the bit rate for each PID. These features are ideal for continuous monitoring of MPEG-2 TS signals in broadcasting stations and similar facilities.
In addition, the LV 58SER04 can do the following when combined with other units.

- Eye pattern display of DVB-ASI signals (when combined with the LV 58SER02).
- Lissajous and level displays of audio signals (when combined with the LV 58SER40A).

FEATURES

- **DVB-ASI Input Connector**
  The unit comes with one DVB-ASI input connector.
- **Video Decoding**
  Decodes compressed video data on the MPEG-2 TS (MPEG-2 Video 4:2:2, 4:2:0) and displays a video signal waveform, vectorscope, or picture.*1
- **Audio Decoding**
  Combine with the LV 58SER40A (DIGITAL AUDIO) to decode audio data on the MPEG-2 TS and show Lissajous, sound image, and level meter displays as well as outputs digital audio signals.
  The decodable audio data types are MPEG-2 AAC, Dolby*2 Digital (AC-3)*3, and LPCM (SMPTE 302M)
- **PID Search**
  Video and audio search for PID automatically.
- **Error Detection**
  Monitors and displays ETSI ETR 290 priority 1 and 2 errors.*4
- **Status Display**
  Displays packet bit rates and measures PCR jitter.
  Displays PAT, PMT, and a selected packet dump.
- **Eye Pattern Display**
  Combine with the LV 58SER02 (EYE PATTERN unit) to display DVB-ASI eye patterns.*5

*1 Cannot descramble broadcast scrambling. May not be able to decode all MPEG-2 data formats.
*2 Dolby is a trademark of Dolby Laboratories.
*3 When decoding Dolby Digital(AC-3), Dolby E option is necessary for the LV 58SER40A(DIGITAL AUDIO)separately.
*4 There are some limitations on the error detection feature.
*5 Jitter cannot be displayed even if the LV 58SER02 is used.

LV 58SER04 MPEG DECODER SPECIFICATIONS

Standards	
Supported 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
Number of Input Connectors	1 connector, 75 Ω
Maximum Input Voltage	±2 V (DC + peak AC)
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

LV 5800 Platform Options

LEADER

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
Image Quality Adjustment	Adjusts the brightness
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 %
HDTV Frequency Characteristics	
Y Signal	±0.5 % (1 to 30 MHz)
C_B,C_R signal	±0.5 % (0.5 to 15 MHz)
Low-pass Attenuation	20 dB or more (at 20 MHz)
SDTV Frequency Characteristics	
Y Signal	±0.5 % (1 to 5.75 MHz)
C_B,C_R signal	±0.5 % (0.5 to 2.75 MHz)
Low-pass Attenuation	20 dB or more (at 3.8 MHz)
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.)
Image Quality Adjustment	Adjusts the brightness
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
Image Quality 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
General Specifications	
Environmental Conditions	Conforms to the LV 5800
Power Supply	Supplied from the LV 5800 70 W max. (if one unit is installed to the LV 5800) 20 W max. (additional power consumption for each additional unit installed to the LV 5800)
Weight	0.4 kg, 0.9 lbs
Accessory	Instruction manual.....1

LV 58SER20 DVI-I OUTPUT UNIT

Plug-In Unit for LV 5800

RoHS

This unit is a DVI-I OUTPUT unit that outputs the contents displayed on the front LCD panel from the DVI-I connector to an external monitor. The unit is installed in a LV 5800 output slot.

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 LV 5800 5 Wmax.
Weight	0.2 kg, 0.4 lbs
Accessory	Instruction manual.....1

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LV 58SER40A DIGITAL AUDIO

Plug-In Unit for LV 5800

New

RoHS

The LV 58SER40(A) (DIGITAL AUDIO) operates as an AES/EBU I/O unit when installed in a LV 5800 input slot or as an AES/EBU output unit when installed in a 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, 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, AC3 and LPCM signals that are embedded in DVB-ASI signals.

*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)**
  This unit operates as an AES/EBU I/O unit when installed in a LV 5800 input slot or as an AES/EBU output unit when installed in a LV 5800 output slot.
- **Headphone Output**
  When you install this unit into an LV 5800 input slot, you can listen to the selected channel audio using a headphone.
- **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/Output Impedance	75 Ω
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
LV 58SER40	TRUE PEAK, PPM, VU
Peak Hold Mode Selection*1	(when the meter response mode is VU)
LV 58SER40A	TRUE PEAK, PPM type I, PPM type II
LV 58SER40	TRUE PEAK, PPM
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)
General Specifications	
Environmental Conditions	The same as the LV 5800
Power Consumption	9 Wmax. supplied from the LV 5800
Weight	0.27 kg, 0.6 lbs
Accessories	Instruction manual .....1 Analog audio cable (LV 58SER40A only) 1