LV 5700A

HD-SDI

SD-SDI

PATENTED:
Equivalent cable length measurement

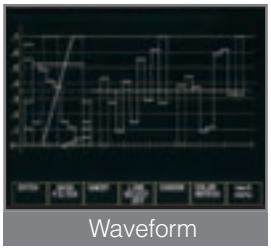
The cabinet is sold separately.

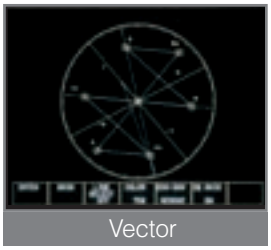
HD-SDI/SD-SDI Color LCD Waveform Monitor

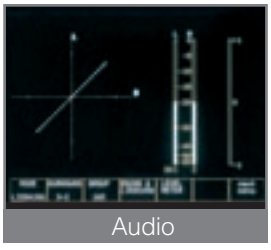
The LV 5700A is a multi SDI monitor with a unique tilting front panel that incorporates an XGA TFT color LCD for HD-SDI and SD-SDI signals.
The functions of waveform monitor, vectorscope, audio lissajous, simple picture monitor, and digital protocol testing are achieved within a single unit.
Signals are processed digitally enabling highly accurate measurements. Extensive error detection and analysis functions are provided allowing SDI signals to be monitored and logged.

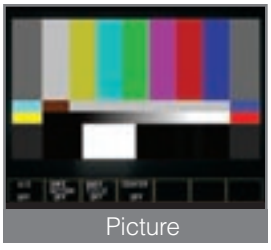
FEATURES

- **Input**
  Receives either HD-SDI signals or SD-SDI signals.
  Supports multiformat, automatic and manual setting of input formats.
- **Display**
  Employs an LCD monitor with XGA resolution.
  Waveform, vector, picture, embedded audio, and status display can be placed side by side or in quad display on the monitor. Depending on the selected combination, bowtie, data dump and optional AES/EBU digital audio or eye pattern can also be displayed. Down converted pseudo waveform and vectorscope modes represent NTSC or PAL modes. Waveform and vector screens have user selectable graticule colors. Furthermore, each display can be magnified.
- **Operation**
  The LV 5700A can be controlled through the panel and remotely controlled through a computer via the Ethernet network. In addition, 100 custom presets can be backed up to compact flash card and recalled from the front panel or via the remote connectors on the rear panel.
- **Extensive Analysis Functions**
  The LV 5700A can be used as an analyzer to detect and log multiple types of digital protocol transmission errors. Screens show gamut errors, data dumps, EDH codes, analysis of voice control packets, equivalent cable length and cable warning measurements, and so on. Frame capture of any screen allows email of bmp files or logs for verification of errors.
- **Output**
  Provides HD-SDI/SD-SDI switching with a reclocked output as well as analog picture monitor output and AES/EBU outputs.
  In addition, an analog XGA output connector is provided enabling information to be displayed on a large external monitor.
- **Power Supply**
  The standard AC power supply allows for universal (90 V to 250 V) operation.
  DC power supply (12 V) enables use for digital acquisition in the field (Option 71).
- **Eye Pattern Display**
  Displays eye patterns and automatically measures physical characteristics such as rise time, fall time, amplitude, and jitter. (Option 70)


Waveform


Vector


Audio


Picture

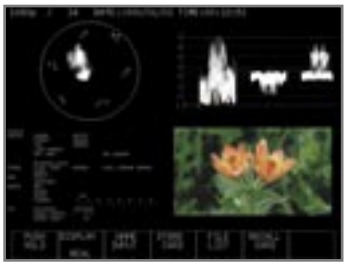
LV 5700A REAR PANEL

LV 5700A display

Picture

Natural picture (flowers) with selectable graticules in 16:9 or 4:3 modes for 4:3, safe action, safe title, center cross and full line select strobe.

Multi

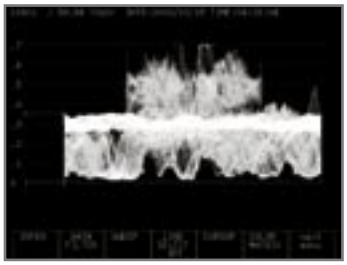


Multi Display of waveform, natural picture, status screen and vectorscope. Many other combinations are available.

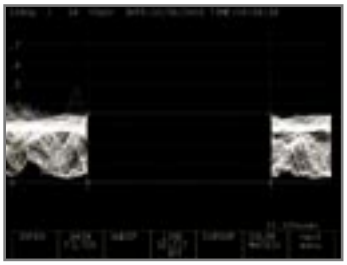
Vector

Vector display as 100/75% of multiformat color bars with I and Q axes displayed.

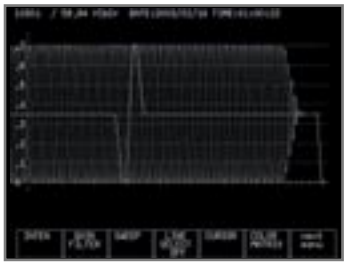
Waveform



Waveform monitor of YC_BC_R overlay of natural picture.



Special Horizontal Sweep mode optimizes H blanking measurements for all formats.



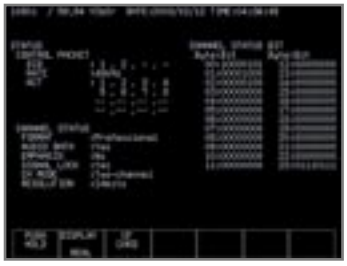
1080i/59.94 sweep of Y channel with horizontal x20 magnification applied.

Audio

Audio display of 5.1 surround sound and 8-Ch bargraphs with VU ballistics. Bargraphs for 60 or 90 dB full scale peak are available.

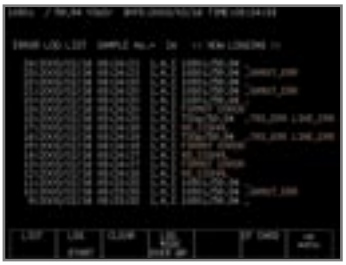
Audio Value makes it easy to see exact reference or noise floor levels. Note peak hold indication on 8-Ch bargraphs.

Status



Audio metadata essence for control packet DID, sample rate, active channels format, etc...

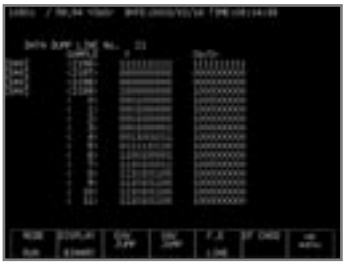
Status screen shows alarms turned on. About 20 protocols are checked here including custom adjustable alarms.



Error log of error number, date, time, module, input channel, INT/EXT sync, signal detection and error description with errors in red.

EDH error flags are broken out and shown for SD as per RP 165.

1080i/59.94 Line 21 shows SAV hex values, Y rise time of white bar 8 clock periods and 200h pedestals for C_BC_R.



Line 21 SAV Y C_B/C_R with the data dump in binary to check XYZ bits for field, vertical, horizontal and protection bit status.

System

Ethernet setting can be auto DHCP or entered manually for IP address, subnet mask and gateway.

LV 5700A SPECIFICATIONS

Video Format	
HD-SDI	
Video System	
1	1920 x 1035 / 60i
2	1920 x 1035 / 59.94i
3	1920 x 1080 / 60i
4	1920 x 1080 / 59.94i
5	1920 x 1080 / 50i
6	1920 x 1080 / 30p
7	1920 x 1080 / 29.97p
8	1920 x 1080 / 25p
9	1920 x 1080 / 24p
10	1920 x 1080 / 23.98p
11	1920 x 1080 / 24sF
12	1920 x 1080 / 23.98sF
13	1280 x 720 / 60p
14	1280 x 720 / 59.94p
Standards Supported	
HD-SDI Standard	SMPTE 292M
Ancillary Data Standard	SMPTE 291M
Embedded Audio Standard	SMPTE 299M
SD-SDI (Supported only on the LV 5700)	
Video System	
1	525 / 59.94i
2	625 / 50i
Standards Supported	
SD-SDI Standard	SMPTE 259M
Ancillary Data Standard	SMPTE 291M
Embedded Audio Standard	SMPTE 272M
Format Setting	
Video System	Select manual setting or automatic setting
Sampling Frequency	HD: Auto switching between 74.25 MHz and 74.25/1.001 MHz SD: 13.5 MHz
Input/Output Connector	
HD-SDI Input	
Input Connector	BNC connector 2 systems A and B, 75 Ω
External Reference Input	
Input Signal	Tri-level sync signal or NTSC/PAL black burst
Input Connector	BNC connector passive loop-through 1 system 2 connectors
XGA Output	
Output Signal	XGA signal
Output Connector	D-sub 15 pin female
HD-SDI Output	
Output Connector	BNC connector 1 connector Outputs the selected channel, 75 Ω
Analog Output	
Output Signal	Y, P_B, P_R or GBR
Output Connector	BNC connector 1 system 3 connectors
AES/EBU Output	
Output Signal	CH1/2, CH3/4, CH5/6, CH7/8 Separated from embedded audio and output Select 2 groups (8 ch) from 4 groups (16 ch)
Output Connector	BNC connector 4 connectors
Remote Connector	
Function	Recalling of presets
Control Signal	TTL level (LOW active)
Control Connector	D-sub 25 pin female 1 connector
Ethernet Connector	
Function	Remote control from an external computer and monitoring of errors, etc.
Input/Output Connector	10BASE-T/100BASE-TX 1 connector
Display Format	
Display Format	XGA effective area 1024 x 768 dots
Dot Clock	65 MHz or 64.935 MHz*
Horizontal Frequency	48.363 kHz or 48.315 kHz*
Vertical Frequency	60 Hz or 59.94 Hz* (*Automatically switch according to the input signal)
Display	Displays waveform display, vector display, picture display, and status display on a single screen side by side
Waveform Display	
Waveform Operation	
EAV-SAV Period	Select show/hide
GBR Conversion	Select Y, P_B, P_R or GBR conversion display
Sweep Magnification	Select x1 or x5
Channel Assignment	Select GBR order or RGB order during GBR conversion display. YRGB display also supported
Vertical Axis	
Filter	Flat, low-pass
Horizontal Axis	
Operation Mode	
Overlay	Displays multiple waveforms overlaid
Parade	Displays waveforms side by side
Timing	Time difference between channels overlay uses bowtie* signals *Authorized by Tektronix, Inc.
Display Format	
Line Display	Overlay: 1H, 2H Parade: 1H, 2H, 3H Timing: 2H
Line Magnification	Select x1, x10, ACTIVE, or BLANK
Field Display	Overlay: 1V, 2V Parade: 1V, 2V, 3V
Field Magnification	Select x1 or x20
Scale	
Scale Display	
Voltage Scale	0 V to 0.7 V, -0.3 V to 0.7 V
% Scale	0 % to 100 %, -50 % to 100 %
Vector Display	
Sweep Magnification	Select from x1, x5, IQ-MAG.
Scale	Color bar switching type between 75 % and 100 %
EAV-SAV Period	Show/hide is synchronized with the waveform display setting
I, Q Axes	Show/hide
Picture Display	
HD Display	Reduced display
SD Display	Magnified display
Embedded Audio Display	
Lissajous Display	
Display Channel	Select from 2 ch or 8 ch display
Display Method	Select X-Y or L-R
Sound Image Display	
Display Channel	Select from 3-1 ch, 3-2 ch, and 3-2-2 ch displays
Peak Level Meter Display	
Display Channel	Simultaneous 8 ch display, groups 1 x 2 or 3 x 4.
Display Method	Peak meter
Channel	
Ch Mapping	Can be mapped arbitrarily from 1 ch to 8 ch
User Bit Display	
Data Dump Display	Displays 192 bits sequentially
Analysis Display	Analyzes and Displays the user bit
Data Dump Display	
Display Format	Displayed separately by serial data sequence or channel.
Digital Signal Analysis	
CRC Error	Detects video signal errors
BCH Error	Detects embedded audio errors
Checksum Error	Detects ANC data errors
Parity Error	Detects ANC data errors
TRS Error	Detects TRS errors
EDH Error	Detects EDH errors
Line Number	Detects line number errors
Gamut Error	Detects level overrange of GBR video signals
Level Error	Detects video level and reserved data errors
Audio Frequency	Detects continuity errors of embedded audio
Format Detection	Detects the SDI video signal format
Audio Information Detection	Detects the presence or absence of embedded audio on each channel Detects the sampling frequency for each group Displays voice control packets
External Sync Lock Detection	Detects the synchronization relationship between the external synchronization signal and the SDI signal
Equivalent Cable Length Measurement	Measures the SDI signal level Displays the cable length based on 800 mVp-p signal source level
Signal Detection	Detects the presence or absence of SDI signals
Line Selector	
Operation Mode	Interlocked type between waveform display, vector display, and picture display
Presets	
Number of Presets	100 sets
Preset Items	All setup items
Recall Method	Through the front panel, remote connector, and Ethernet Switch 8 points and 100 points for recalling through the remote connector
Cursor Measurement	
Configuration	Horizontal cursor: 2 lines (REF, Δ) Vertical cursor: 2 lines (REF, Δ)
Amplitude Measurement	Measured in [%] and [V]
Time Measurement	Displayed in [ms] and [µs]
Frequency Measurement	Displays the frequency in which the time between cursors is considered a cycle.
Environmental Conditions	
Operating Temperature	0 to +40 °C
Operating Humidity	≤ 85 % RH (without condensation)
Spec Guaranteed Temperature	+10 to +30 °C
Spec Guaranteed Humidity	≤ 85 % RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2,000 m
Pollution Degree	2
Power Requirements	90 to 250 VAC (48 Hz to 440 Hz) or 9 to 17 VDC (Option)
Dimensions and Weight	215 (W) x 133 (H) x 449 (D) mm 4.9 kg 8 1/2 (W) x 5 1/4 (H) x 17 11/16 (D) in., 10.8 lbs.
Supplied Accessories	Instruction manual ····· 1 Power cord ····· 1 Cover/Inlet stopper ····· 1 Screws for rack mounting (inch specification) ····· 2 25-pin D-sub connector ····· 1 25-pin D-sub connector cover ····· 1

LV 5700A Multi-SDI Monitor Available Options

Our industry is changing faster than our customers can adopt to the new technology; systems, formats and performance demands on the production, post production and distribution channels of the pro-video industry have created the necessity for a monitoring instrument that is not only flexible but also highly configurable and adoptable to future format and system changes. The Leader LV 5700A Multi-SDI monitor was designed to provide the utmost in system configuration flexibility and allows for future options to be added in order to ensure our customers' investment remains useful for years to come.

The instrument handles HD-SDI and SD-SDI inputs in its standard configuration (see pages 6 to 7 for standard configuration specs and details) and can be upgraded to handle a variety of inputs depending on your system's needs. For example, our latest option introduction (OP77 Dual Link) allows our LV 5700A owners to upgrade their instrument to include the new Dual Link format without having to purchase a new instrument. Upcoming introductions (NAB2005) will include an MPEG decode and monitoring function for the LV 5700A allowing LV 5700A users the ability to decode and monitor MPEG streams. Our LV 5700A provides the flexible platform needed to satisfy the variety of formats and systems available in our industry today; but, it is Leader's wide selection of options that make the LV 5700A an excellent investment not only for today but for years to come.

Two (2) expansion slots are available for the LV 5700A and the available options are listed below :

LV 5700A OP70 (LV 57SER70) : HD/SD Eye Pattern Module; Takes 2 Slots
LV 5700A OP71 (LV 57SER71) : DC Operation Module for LV 5700A (no slots required)
LV 5700A OP72 (LV 57SER72) : Additional HD/SD-SDI Input Module For The LV 5700A (adds 2 more SDI inputs for a total of 4)
LV 5700A OP73A (LV 57SER73A) : NTSC/PAL Composite Analog Input Module
LV 5700A OP74 (LV 57SER74) : Analog Audio Monitor Module
LV 5700A OP75 (LV 57SER75) : AES/EBU Digital Audio Module (8 Channels) For LV 5700A
LV 5700A OP76 (LV 57SER76) : HD/SD Eye Pattern Module; Takes 2 Slots
LV 5700A OP77 (LV 57SER77) : Dual Link Module
LV 5700A MPEG Card : MPEG Stream Module; Takes 1 Slot

In the next few pages (pages 10 - 13) you will find a brief description and specifications for our LV 5700A options. For additional information, please call us at 1 (800) 645-5104 or e-mail us at Sales@LeaderUSA.com

Product Name	Selection Guide (Combination Conditions)																									
	Option Name Model Number	3 Options Selection					2 Options Selection										1 Option Selection									
HD/SD EYE Pattern *1	Option 70 LV 57SER70						70										70									
DC Operation	Option 71 LV 57SER71	71	71	71	71	71	71	71	71	71	71	71						71								
Additional HD/SD-SDI Input	Option 72 LV 57SER72	72					72						72						72							
NTSC/PAL Composite Analog Input	Option 73A LV 57SER73A		73A					73A						73						73A						
Analog Audio Monitor	Option 74 LV 57SER74			74					74						74							74				
AES/EBU Digital Audio	Option 75 LV 57SER75				75					75						75							75			
HD/SD EYE Pattern *2	Option 76 LV 57SER76	76	76	76	76	76					76	76	76	76	76	76								76		
Dual Link	Option 77 LV 57SER77					77										77										77

* 1: Phase Detection is used for measuring the jitter value. Features include EYE Pattern, Jitter Display and Histogram.
* 2: Eye Pattern is used for measuring the jitter value. Features include EYE pattern only.

HD/SD Eye Pattern Module (OP70 & OP76)

Leader provides two different options for Eye Pattern monitoring for the LV 5700A; Option 70 and Option 76. Option 70 represents our full-featured Eye Pattern monitoring solution and takes up 2 slots in the LV 5700A while our Option 76 (reduced feature set) only occupies one slot in the LV 5700A leaving the other slot open for other options and upgrades.

Our OP70 has selectable display modes that encompass eye pattern views, jitter measurements (both manual and automatic) and a histogram with jitter. The OP70 uses both equivalent sampling and phase detection methods in order to provide the eye pattern measurements.

Our OP76 includes all of the measurement features of the OP70 except for the histogram function. Eye pattern measurements are made using the equivalent sampling technique.

Both OP70 and OP76 provide eye pattern displays, cursor and automatic measurement modes. Jitter is characterized with automatic readouts of key parameter measurements for rise time, fall time, amplitude and jitter. Five high pass filters are selectable from 10Hz to 100KHz. Lower edge filters for timing jitter (10Hz) or alignment jitter (100KHz) measure jitter components up to one tenth of the clock frequency. An external rear panel clock input allows for making optimum, absolute jitter measurements without adding PLL reclocking artifacts while a rear panel output (OP70 only) allows to monitor demodulated jitter components on an external spectrum analyzer.

OP70 HD/SD EYE PATTERN SPECIFICATIONS

Standard Supported	HD SMPTE292M SD SMPTE259M
Data Rate	HD 1.485 Gbps or 1.485/1.001 Gbps SD 270 Mbps
Eye Pattern Display	
Display	Displays the SDI input waveform before equalizing
Method	Equivalent time sampling method
Frequency Range	10 MHz to 2.5 GHz within +1, -3 dB
Amplitude Accuracy	Within 800 mV ± 5 % for 800 mV input
Time Axis	2 waveform display 100 ps/div
	4 waveform display 200 ps/div
	16 waveform display 800 ps/div
Time Axis Accuracy	Within ± 3 %
Jitter Filter	10 Hz HPF 100 Hz HPF 1 kHz HPF 10 kHz HPF 100 kHz HPF
Cursor Measurement	Amplitude measurement using the Y cursor Time and jitter measurements using the X cursor Rise time and fall time measurements using the Tr and Tf cursors
Automatic Measurement	Measures and displays the amplitude, the jitter, the rise time, and the fall time from the eye pattern. Can be turned on/off
Jitter Display	
Display	Displays the jitter component of the SDI input
Method	Phase detection method
Amplitude Accuracy	Within ± 10 % when applying 10 KHz 1 UI jitter (using 100 Hz filter)
Jitter Filter	10 Hz HPF 100 Hz HPF 1 kHz HPF 10 kHz HPF 100 kHz HPF
Cursor Measurement	Jitter measurement using cursors
Automatic Measurement	Displays the amount of jitter in time (sec) and unit interval (UIp-p)
Jitter Output	
Output Connector	75 Ω BNC connector, 1 output
Output Level	Within 200 mV/UI ± 20 % (at 10 kHz jitter frequency and 75 Ω termination) *Jitter output is enabled in jitter display mode.

EXT REF Input for Eye Patterns	
Standard	HD SMPTE292M SD SMPTE259M
Data Rate	HD 1.485 Gbps or 1.485/1.001 Gbps SD 270 Mbps
Input Connector	75 Ω BNC connector, 1 input
Input Level	Signal source amplitude Within 0.8 Vp-p ±10 %
Input Format	HD SMPTE292M SD SMPTE259M
Maximum Input Voltage	± 2 V (DC + Peak AC)

OP76 HD/SD EYE PATTERN SPECIFICATIONS

Standard Supported	HD SMPTE292M SD SMPTE259M
Data Rate	HD 1.485 Gbps or 1.485/1.001 Gbps SD 270 Mbps
Eye Pattern Display	
Display	Displays the SDI input waveform before equalizing
Method	Equivalent time sampling method
Frequency Range	10 MHz to 2.5 GHz within +1, -3 dB
Amplitude Accuracy	Within 800 mV ± 5 % for 800 mV input
Time Axis	2 waveform display 100 ps/div
	4 waveform display 200 ps/div
	16 waveform display 800 ps/div
Time Axis Accuracy	Within ± 3 %
Jitter Filter	10 Hz HPF 100 Hz HPF 1 kHz HPF 10 kHz HPF 100 kHz HPF
Cursor Measurement	Amplitude measurement using the Y cursor Time and jitter measurements using the X cursor Rise time and fall time measurements using the Tr and Tf cursors
Automatic Measurement	Measures and displays the amplitude, the jitter, the rise time, and the fall time from the eye pattern. Can be turned on/off
EXT REF Input for Eye Patterns	
Standard	HD SMPTE292M SD SMPTE259M
Data Rate	HD 1.485 Gbps or 1.485/1.001 Gbps SD 270 Mbps
Input Connector	75 Ω BNC connector, 1 input
Input Level	Signal source amplitude within 0.8 Vp-p ±10 %
Input Format	HD SMPTE292M SD SMPTE259M
Maximum Input Voltage	± 2 V (DC + Peak AC)

Note: Option 70: Phase detection method is used for jitter measurement and functions are eye pattern, jitter display and histogram
Option 76: Equivalent time sampling method is used for jitter measurement and function is eye pattern

DC Operation Module (OP71)

Ideal for mobile and field acquisition applications, this option allows the LV 5700A to operate from a 12 Vdc source. A wide range DC supply may be used (9 Vdc - 17 Vdc). This option can only be installed at the time of purchase.

OP71 DC OPERATION SPECIFICATIONS

DC Operation	
Input Voltage Range	DC 9V ~ 17V
Input Terminal	XLR Connector (Pin 1 is GND and Pin 4 is power terminal)
Fuse	Time lag 10A

Additional HD/SD-SDI Input Module (OP72)

In applications that require more than 2 monitoring inputs, the OP72 adds another 2 HD-SDI and SD-SDI inputs for a total of 4 monitoring SD&HD - SDI inputs. Specifications for this option are identical to the specifications of the LV 5700A standard inputs (see page 12 for specification details). All of the monitoring/measurement features and capabilities of the LV 5700A apply to the OP72 inputs as well.

OP72 ADDITIONAL SDI INPUT SPECIFICATIONS

Standards Supported	
HD	SMPTE 274M, 292M, 240M, 296M, RP211
SD	SMPTE 259M
SDI Input	
Input Connector	BNC connector, 2 systems (A/B)
Input Impedance	75 Ω
Input Return Loss	15 dB above, 5 MHz serial clock frequency
SDI Output	
Output Connector	BNC connector, 1 connector, Selected channel output
Output Impedance	75 Ω
SD-SDI Dedicated Output Connector	BNC connector, 1 connector, Active only when selected signal is SD-SDI signal
Weight	5.0 kg
Maximum Power Consumption	120 W

NTSC/PAL Composite Analog Input Module (OP73A)

Ideal for broadcast and field acquisition professionals, the option 73A adds expansion capabilities to accommodate analog NTSC/PAL composite inputs. Two composite inputs (auto-sensing) are provided and the selected input is fed to a monitoring output. Monitoring functions include waveform, vector and picture displays. SCH measurement is also provided for both NTSC and PAL and full line selection capabilities allow monitoring on a line-by-line basis.

OP73A NTSC/PAL COMPOSITE ANALOG SPECIFICATIONS

Standards Supported	
NTSC	NTSC-M, SMPTE 170M
PAL	PAL-B, G, H, I, ITU-R BT.470
Input	
Composite Video	Select A or B
Input Connector	BNC connector
Input Impedance	75Ω
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	75Ω
Output Amplitude	≤1 Vp-p ± 5%
Frequency Characteristics	25 Hz to 5 MHz within ± 5% 5 MHz to 5.6 MHz within +5% to -10%
Display	
WAVEFORM	Waveform display
VECTOR	Vectorscope display
PICTURE	Picture display * 2 screens mode, 4 screens mode, audio display, and status display are not available.
Waveform Display Section	
Vertical Axis	
Sensitivity	V Scale 1 Vp-p (-0.3 V to 0.7 V) IRE Scale 1 Vp-p (-40 IRE to 100 IRE)
Gain	x1, x5 Selectable
Variable Gain	x 0.1 or less to x5 or more
Amplitude Accuracy	≤1%
Frequency Characteristics	
Composite Signal	25 Hz to 5 MHz within 2%
	5 MHz to 5.6 MHz within +3% to -5%
Step Response (for 1V 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 one single waveform
Display Format	
Line Display	Overlay 1H or 2H
Line Magnification	Select x1 or x10
Field Display Overlay	1V or 2V
Field Magnification	Select x1 or x20
Time Base Accuracy	± 1%
Vectorscope Display Section	
Sensitivity	Select 75% or 100% (ref color bar pattern)
Setup	Select 0% or 7.5%
Gain	Select x1, x5 or IQ-MAG
Variable Gain	x0.1 or less to x10 or more
Phase Accuracy	± 2°
Amplitude Accuracy	± 3%
Phase Adjustment Range	360°
IQ Axis	Select show or hide
SCH Measurement Section	
Accuracy	± 5° (room temperature 25°C)
Color Frame Area	± 60°

Analog Audio Monitor Module (OP74)

Option 74 decodes any pair of embedded AES/EBU channels (must be in the same group of 8) to analog audio and provides a mini-speaker and headphone output for audio monitoring. Front panel menu selection allows for headphone monitoring of selected channels. This option is not needed if the LV 5700A is equipped with an Option 75 (External AES/EBU Inputs for the LV 5700A). Option 75 includes the functions of Option 74.

OP74 ANALOG AUDIO MONITOR SPECIFICATIONS

Analog Audio Output **Headphone Audio Output**	
Output Channels	1 (monaural)
Output Connector	Miniature jack (Stereo type)
Built-In Loudspeaker	
Loudspeaker Size	1 (monaural)
Loudspeaker Number	36 ø

Note: Ear phone output terminal is connected to 32Ω headphone for volume adjustment

AES/EBU Digital Audio Module (8 Channels) (OP75)

The LV 5700A Multi-SDI monitor is provided with audio monitoring, measurement and data analysis capabilities for embedded AES/EBU monitoring (audio is disembedded and output via 4 BNC connectors; 8 channels, as standard). Facilities using separate (non-embedded) AES/EBU audio will need to use the OP75 External AES/EBU Inputs option in order to monitor external AES/EBU. All of the embedded audio measurement, monitoring and analysis abilities of the LV 5700A are also available for monitoring external AES/EBU using the OP75.

Option 75 adds monitoring and display for 8-channels of AES/EBU digital audio inputs. Surround sound image, lissajous, bar graphs and digital levels are displayed. An on-screen display indicates if the embedded audio is synchronous with the external AES/EBU input audio and shows lock/unlock or no signal. A speaker is also included to allow monitoring of the selected channel.

OP75 AES/EBU DIGITAL AUDIO SPECIFICATIONS

Format Supported	AES/EBU format 48 kHz
AES/EBU Digital Audio Input	
Input Channels	4 BNC, 8 channels (CH 1/2, 3/4, 5/6, 7/8)
Input Connector	BNC Connector
Input Impedance	75Ω
Headphone Audio Output	
Output Channels	1 terminal
Output Connector	Miniature jack (stereo type)
Output Format	Stereo. Selects the channel from the menu to set up L, R channel
Built-In Loudspeaker	
Output Format	Mono. Outputs selected L channel sound to speaker output.

Dual Link Module (OP77)

First to introduce and implement a Dual Link monitoring solution for the production/acquisition and post production markets, Leader has been providing Dual Link solutions to the emerging HDTV based feature film production since 2003. Our most recent introduction, our OP77 Dual Link option, is a new SDI input module that adds compliance to HD-SDI Dual Link formats as per SMPTE 372M. OP77 provides separate, dedicated A and B inputs (with reclocked outputs) for Dual Link monitoring on the LV 5700A; leaving the standard built-in HD-SDI inputs available for traditional SDI monitoring.

Waveform, vector and status/data dump screens are available for Dual Link monitoring and they represent a combination of BOTH links; all of the facilities of the LV 5700A can be used to monitor Dual Link systems. A picture display as well as embedded audio monitoring is also provided (Link A only).

With the addition of OP77 Dual Link option, the LV 5700A becomes the ideal monitoring tool for Dual Link applications. The unit also retains all of its HD-SDI monitoring capabilities and adding this option does not change the standard operation of the instrument.

OP77 DUAL LINK SPECIFICATIONS

Standard Supported	SMPTE 372M
Signal Format	Frame / field rates
4:2:2 (Y' C_B' C_R') / *10bit	60, 60/1.001, 50 p
4:4:4 (R' G' B') / *10bit	60, 60/1.001, 50i 30, 30/1.001, 25, 24, 24/1.001 p, PsF
4:4:4 (R' G' B') / *12bit	
4:2:2 (Y' C_B' C_R') / *12bit	
Differential Phase Between A/B Link	Automatically compensated and displayed up to 100 clocks (approx. 1.4us)
Input/Output Connectors	
HD-SDI Input	
Input Connector	BNC connector, 2 connectors (A Link, B Link)
Input Impedance	75Ω
Input Return Loss	≥15dB, 5MHz ~ Serial clock frequency
Max Input Voltage	±2V (DC + peak AC)
SDI Output	
Output Connector	BNC connector, 2 connectors (A Link, B Link)
Output Impedance	75Ω
Output Voltage	800 mVp-p ± 10%
Output Return Loss	≥15dB, 5MHz ~ Serial clock frequency
Signal Format	Output as input signal or output as YCbCr converted from RGB
Marker	Luminance offset is added to selected line
Status Display	
Signal Detection	HD-SDI signal detection of both A/B Links at the same time
Format Detection	HD-SDI signal format detect, Error display when A/B Link formats do not match or are unrecognized formats.
TRS Error	TRS error detection of both A/B Links at the same time
Line Number Error	Line number error detection of both A/B Links at the same time
CRC Error	HD-SDI transmission error detection of both A/B Links at the same time
Reserved Error	Reserved error detection of both A/B Links at the same time
Level Error	Video level error detection of both A/B Links at the same time
Gamut Error	Gamut error detection (does not detect gamut during GBR 4:4:4 input)
Composite Gamut	Monitors level error of component to composite conversion errors
BCH Error	Embedded audio transmission error detection of both A/B Links at the same time
Audio Continuity	Continuity error detection of the selected audio packets
Audio Information	Detects the presence of each audio channel
External Sync	Detection of external sync signal
Cable Length	SDI signal level measurement Display LS-5CFB coaxial cable length at signal source level 800 mVp-p by calculation. Display as <5m, 5m, …, 125m, > 130m. Resolution, 5m per step Accuracy, ±20m (when using LS-5CFB)
Phase Difference	Display phase difference of A/B Link in time unit display
Phase Shift Error	Displays error when the phase shift is over the setting limit. Synchronized or unsynchronized of A/B Link can be checked.
Payload ID Display	SMPTE 352M compliant for payload ID packet display
Environmental Specifications	
Operating Temperature	0 to 40 °C
Operating Humidity	≤85% RH (without condensation)
Spec-Guaranteed Temperature	10 to 30 °C
Spec-Guaranteed Humidity	≤85% RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2,000m
Overvoltage Category	II
Pollution Degree	2
Power Requirements	Supplied by LV 5700A series mainframe
Accessories	Instruction manual 1

MPEG Stream Module

During NAB 2005 we will be introducing another exciting and useful option for the LV5700A; our MPEG input card. This new option will allow you to input MPEG streams to the LV 5700A (up to 60 Mbits). The card will decode the selected program and will pass the base band video to the LV 5700A; in this manner, video professionals can monitor key parameters of the MPEG stream as well as monitor and measure the baseband video and view waveform, vector, picture and audio analysis screens. More details will be available at NAB2005 and we expect delivery for this option shortly after NAB 2005.

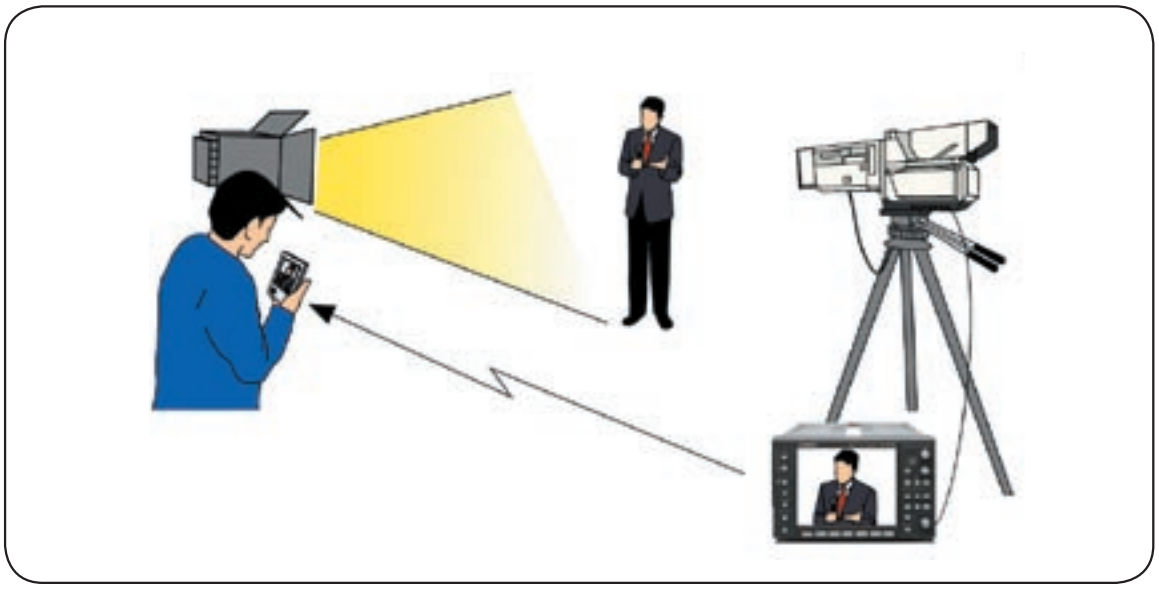
Lighting Monitor (FS 3018)

Option FS 3018 the Lighting Monitor, garnered 5 Pick Hit Awards at NAB 2003. Firmware is added to the LV 5700A enabling extended use of network functions.
Basically, it remotely views and judges what the digital camera, monitored by the LV 5700A is seeing. It expedites the process of checking lighting conditions during digital acquisition and monitoring on the set. The Lighting Monitor transmits any quadrant of the multiple-display screen of the LV 5700A Ethernet output, to a wireless access point router (802.11 b) and then to a WiFi enabled Pocket PC 2002 PDA. Tapping an arbitrary part of the picture displayed on the browser screen of the Pocket PC, and then tapping zoom will show a magnified screen area with YRGB values. The user can also preset custom separate upper and lower YRGB alarm levels. The engineer can obtain lighting measurements and improve lighting adjustments while standing next to the lighting apparatus. Monitoring YRGB levels with custom alarms, expedites lighting adjustments to legal digital values saving reshoots, which is time and money.

Remote Monitoring Software (FS 3019)

Option FS 3019 application software allows PC remote control and monitoring of up to 50 LV 5700A Multi SDI Monitors over a local area network. Error logs are automatically created and stored to facilitate proper record keeping. Users can access and remote control the LV 5700A from personal computers equipped with a dial-up function over the Internet or leased lines enabling secure and reliable monitoring of remote broadcast stations.

● Lighting Monitor (FS 3018)



● Remote Monitoring Software (FS 3019)