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).
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 YCbCr overlay of natural picture.

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

1080/59.94 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.

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

Status
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.

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

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

Line 21 SAV Y Cb/Cr with the data dump in binary to check XYZ bits for field, vertical, horizontal and protection bit status.
**LV 5700A SPECIFICATIONS**

**SD-SDI (Supported only on the LV 5700)**

**Video System**

- **Display Format**
  - Parade
  - Overlay
  - Channel Assignment
  - Sweep Magnification
  - Display

- **Vertical Frequency**
  - 25 MHz

- **Horizontal Frequency**
  - 156.25 MHz

- **Display Format**
  - XGA

- **Input/Output Connector**
  - **XGA Output**
    - XGA signal
  - **Output Connector**
    - BNC connector 1 connector
  - **Output Signal**
    - Outputs the selected channel
  - **Remote Connector**
    - Recalling of presets
  - **Function**
    - TTL level
  - **Control Signal**
    - D-sub 25 pin female
  - **Control Connector**
    - Remote control from an external computer

- **Ethernet Connector**
  - **Connected Type**
    - 1 system
  - **Function**
    - Signal Detection
  - **Connector**
    - BNC connector

- **Audio Information Detection**
  - Detects the presence or absence of embedded audio

- **Audio Frequency**
  - Detects the SDI video signal format

- **Format Detection**
  - Detects the SDI video signal format

- **Audio Information Detection**
  - Detects the presence or absence of embedded audio

- **Signal Detection**
  - Detects the presence or absence of SDI signals

- **Line Selectors**
  - Operation mode

- **Display Format**
  - Display format

- **Dot Clock**
  - 48.365 kHz

- **Vertical Frequency**
  - 72 Hz

- **Display**
  - XGA effective area

- **Waveform Display**
  - Waveform operation

- **GBC Conversion**
  - Sweep Magnification

- **Channel Assignment**

- **Vertical Axis**
  - Vertical display

- **Horizontal Axis**
  - Operation mode

- **Overlay Timing**

- **Display Format**
  - Line display

- **Line Magnification**
  - Field display
  - Field magnification

- **Scale Magnification**
  - Scale display

- **Voltage Scale**
  - Select x1, x10, ACTIVE, or BLANK

- **Vector Display**
  - Sweep Magnification

- **Scale**
  - EAV-SAV period

- **I, Q Axes**
  - SD-SDI standard

- **Serial Data Standard**
  - XGA output

- **Display Mode**
  - User bit display

- **Data Dump Display**
  - Analysis display

- **Digital Signal Analysis**
  - Detects video signal errors

- **CRC Error**
  - Detects CRC error

- **BCH Error**
  - Detects BCH error

- **Checksum Error**
  - Detects checksum error

- **Parity Error**
  - Detects parity error

- **TRS Error**
  - Detects TRS error

- **EDH Error**
  - Detects EDH error

- **Line Number**
  - Detects line number error

- **Gamut Error**
  - Detects gamut error

- **Level Error**
  - Detects level error

- **Audio Frequency**
  - Detects audio frequency

- **Format Detection**
  - Detects format detection

- **Audio Information Detection**
  - Detects audio information detection

- **External Sync Lock Detection**
  - Detects external sync lock detection

- **SD Display**
  - Voice control packets

- **Display**
  - Displays voice control packets

- **Cursor Measurement**
  - Configuration

- **Amplitude Measurement**
  - Frequency measurement

- **Environmental Conditions**
  - Operating temperature

- **Specified Guaranteed Humidity**
  - Specified guaranteed humidity

- **Specified Guaranteed Temperature**
  - Specified guaranteed temperature

- **Operating Environment**
  - Indoor use

- **Operation Altitude**
  - Up to 2,000 m

- **Pollution Degree**
  - 2

- **Power Requirements**
  - Indoor use

- **Dimensions and Weight**
  - Box size

- **Supplied Accessories**
  - Instruction manual

---

**Display Format**

- **Display Format**
  - XGA effective area

- **Dot Clock**
  - 48.365 kHz

- **Vertical Frequency**
  - 72 Hz

- **Display**
  - XGA effective area

**Waveform Display**

- **Waveform Operation**
  - Sweep Magnification

- **Channel Assignment**

- **Vertical Axis**
  - Vertical display

- **Horizontal Axis**
  - Operation mode

- **Overlay Timing**

- **Display Format**
  - Line display

- **Line Magnification**
  - Field display
  - Field magnification

- **Scale Magnification**
  - Scale display

- **Voltage Scale**
  - Select x1, x10, ACTIVE, or BLANK

- **Vector Display**
  - Sweep Magnification

- **Scale**
  - EAV-SAV period

- **I, Q Axes**
  - SD-SDI standard

- **Serial Data Standard**
  - XGA output

- **Display Mode**
  - User bit display

- **Data Dump Display**
  - Analysis display

- **Digital Signal Analysis**
  - Detects video signal errors

- **CRC Error**
  - Detects CRC error

- **BCH Error**
  - Detects BCH error

- **Checksum Error**
  - Detects checksum error

- **Parity Error**
  - Detects parity error

- **TRS Error**
  - Detects TRS error

- **EDH Error**
  - Detects EDH error

- **Line Number**
  - Detects line number error

- **Gamut Error**
  - Detects gamut error

- **Level Error**
  - Detects level error

- **Audio Frequency**
  - Detects audio frequency

- **Format Detection**
  - Detects format detection

- **Audio Information Detection**
  - Detects audio information detection

- **External Sync Lock Detection**
  - Detects external sync lock detection

- **SD Display**
  - Voice control packets

- **Cursor Measurement**
  - Configuration

- **Amplitude Measurement**
  - Frequency measurement

- **Environmental Conditions**
  - Operating temperature

- **Specified Guaranteed Humidity**
  - Specified guaranteed humidity

- **Specified Guaranteed Temperature**
  - Specified guaranteed temperature

- **Operating Environment**
  - Indoor use

- **Operation Altitude**
  - Up to 2,000 m

- **Pollution Degree**
  - 2

- **Power Requirements**
  - Indoor use

- **Dimensions and Weight**
  - Box size

- **Supplied Accessories**
  - Instruction manual
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 adaptable 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

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

* 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.
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 Module (OP70 & OP76)

#### 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 the jitter component of the SDI input  
| Method | Phase detection method  
| Amplitude Accuracy | Within ± 10 % when applying 10 kHz 1 Ul 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 (Ul/p-p)  
| Output Connector | 75 Ω BNC connector, 1 output  
| Output Level | Within 200 mV/UI ± 20 % (at 10 kHz jitter frequency and 75 Ω termination)  
| Note: | Jitter output is enabled in jitter display mode.  
| EXT REF Input for Eye Patterns | Standard Supported | 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 Supported | 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

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Operation</td>
<td>DC 9V ~ 17V</td>
</tr>
<tr>
<td>Input Voltage Range</td>
<td>XLR Connector (Pin 1 is GND and Pin 4 is power terminal)</td>
</tr>
<tr>
<td>Input Terminal</td>
<td>Time lag 10A</td>
</tr>
<tr>
<td>Fuse</td>
<td></td>
</tr>
</tbody>
</table>

## 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

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

## 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

<table>
<thead>
<tr>
<th>Standards Supported</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NTSC</strong></td>
<td>NTSC-M, SMPTE 170M</td>
</tr>
<tr>
<td><strong>PAL</strong></td>
<td>PAL-B, G, H, I, ITU-R BT.470</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td></td>
</tr>
<tr>
<td>Composite Video</td>
<td>Select A or B</td>
</tr>
<tr>
<td>Input Connector</td>
<td>BNC connector</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>75 Ω</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>≥ 30 dB (up to 6 MHz)</td>
</tr>
<tr>
<td>Maximum Input Voltage</td>
<td>± 5 V (DC + Peak AC)</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td></td>
</tr>
<tr>
<td>Composite Video</td>
<td>Active</td>
</tr>
<tr>
<td>Output Connector</td>
<td>BNC connector, 1 system 1 connector</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>75 Ω</td>
</tr>
<tr>
<td>Output Amplitude</td>
<td>≤1 Vp-p ± 5%</td>
</tr>
<tr>
<td>Frequency Characteristics</td>
<td>25 Hz to 5 MHz within ±5%</td>
</tr>
<tr>
<td></td>
<td>5 MHz to 5.6 MHz within +5% to -10%</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td></td>
</tr>
<tr>
<td>Waveform Display</td>
<td>Waveform display</td>
</tr>
<tr>
<td>Vector Display</td>
<td>Vectorscope display</td>
</tr>
<tr>
<td>Picture Display</td>
<td>Picture display</td>
</tr>
<tr>
<td></td>
<td>* 2 screens mode, 4 screens mode, audio display, and status display are not available.</td>
</tr>
<tr>
<td><strong>Waveform Display Section</strong></td>
<td></td>
</tr>
<tr>
<td>Vertical Axis</td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>V Scale 1 Vp-p (-0.3 V to 0.7 V)</td>
</tr>
<tr>
<td></td>
<td>IRE Scale 1 Vp-p (-40 IRE to 100 IRE)</td>
</tr>
<tr>
<td>Gain</td>
<td>x1, x5 Selectable</td>
</tr>
<tr>
<td>Variable Gain</td>
<td>x0.1 or less to x5 or more</td>
</tr>
<tr>
<td>Amplitude Accuracy</td>
<td>≤1%</td>
</tr>
<tr>
<td>Frequency Characteristics</td>
<td>25 Hz to 5 MHz within ±2%</td>
</tr>
<tr>
<td></td>
<td>5 MHz to 5.6 MHz within +3% to -5%</td>
</tr>
<tr>
<td><strong>Step Response</strong></td>
<td></td>
</tr>
<tr>
<td>(for 1V full scale, flat, 2T pulse, and 2T bar)</td>
<td></td>
</tr>
<tr>
<td>Overshoot</td>
<td>±2%</td>
</tr>
<tr>
<td>Preshoot</td>
<td>±1%</td>
</tr>
<tr>
<td>Ringing</td>
<td>±2%</td>
</tr>
<tr>
<td>Pulse/Bar Ratio</td>
<td>±1%</td>
</tr>
<tr>
<td>Vertical Tilt</td>
<td>±1%</td>
</tr>
<tr>
<td>Filter</td>
<td>Luminance filter</td>
</tr>
<tr>
<td>DC Restorer</td>
<td>Clamp to the back porch (fixed)</td>
</tr>
<tr>
<td><strong>Horizontal Axis</strong></td>
<td></td>
</tr>
<tr>
<td>Operation Mode</td>
<td>Overlay</td>
</tr>
<tr>
<td>Display Format</td>
<td>Displays only one single waveform</td>
</tr>
<tr>
<td><strong>Display Format</strong></td>
<td></td>
</tr>
<tr>
<td>Line Display</td>
<td>Overlay 1H or 2H</td>
</tr>
<tr>
<td>Line Magnification</td>
<td>Select x1 or x10</td>
</tr>
<tr>
<td>Field Display Overlay</td>
<td>1V or 2V</td>
</tr>
<tr>
<td>Field Magnification</td>
<td>Select x1 or x20</td>
</tr>
<tr>
<td>Time Base Accuracy</td>
<td>±1%</td>
</tr>
<tr>
<td><strong>Vectorscope Display Section</strong></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Select 75% or 100% (ref color bar pattern)</td>
</tr>
<tr>
<td>Setup</td>
<td>Select 0% or 7.5%</td>
</tr>
<tr>
<td>Gain</td>
<td>Select x1 or x5 or IQ-MAG</td>
</tr>
<tr>
<td>Variable Gain</td>
<td>x0.1 or less to x10 or more</td>
</tr>
<tr>
<td>Phase Accuracy</td>
<td>±2°</td>
</tr>
<tr>
<td>Amplitude Accuracy</td>
<td>±3%</td>
</tr>
<tr>
<td>Phase Adjustment Range</td>
<td>360°</td>
</tr>
<tr>
<td>IQ Axis</td>
<td>Select show or hide</td>
</tr>
<tr>
<td><strong>SCH Measurement Section</strong></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5° (room temperature 25°C)</td>
</tr>
<tr>
<td>Color Frame Area</td>
<td>±60°</td>
</tr>
</tbody>
</table>
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 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’C’) / *10bit: 60, 60/1.001, 50 p
  - 4:4:4 (R’ G’ B’) / *10bit: 60, 60/1.001, 50i
  - 4:4:4 (R’ G’ B’) / *12bit: 30, 30/1.001, 25, 24, 24/1.001 p, PsF
  - 4:2:2 (Y’C’C’) /*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
    - Signal Format: Output as input signal or output as YCbCr
      - Output as input signal or output as YCbCr
  - SDI Output
    - Input 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
- SDI Output
  - Output Voltage: 800 mVp-p ± 10%
  - Output Return Loss: ±15dB, 5MHz ~ Serial clock frequency
  - Signal Format: Output as input signal or output as YCbCr
- 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 Continity: 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 L5-SCFB 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 L5-SCFB)
  - 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 baseband 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.