General

The LV5600/LV7600 is a hybrid-type waveform monitor and rasterizer compatible with 4K/HD/SD-SDI signal and HD/SD IP signal. The LV5600 is a waveform monitor with a 7-inch touch screen display in a compact 3U enclosure with built-in AC power supply. The LV7600 is a rasterizer with the same function as the LV5600 in a 1U full rack enclosure. Selection of necessary input signals and functions from various options, and customization to the specification that fits your purpose are possible.

Features

Supports various signal inputs
SDI signals up to 12 G-SDI and IP (video over IP) signals can be observed/monitored. Audio signals can correspond to SDI embedded Audio, Audio multiplexed to IP, external input AES/EBU, analog Audio.

IP input format
The IP signal corresponds to the video signal of the 2K video format at SMPTE ST 2022-6 (non-compression) and SMPTE 2110-20 (non-compression). In 2K video format, up to 2 channels can be received with one 10 Gbit Ethernet cable.

Excellent operability
With the front panel equipped with key buttons and knobs that follow the operability of conventional models, operation with a USB mouse is also possible. In addition, the LV5600 adopts a 7-inch full HD panel with a touch panel function, and the LV7600 can be operated and set intuitively by touch operation by connecting an external LCD adopted touch panel with a USB cable.

* It does not guarantee the operation with the external LCD monitor adopted by all touch panels.

SDI input format
It supports SD- SDI, HD- SDI, 3G- SDI, 12G- SDI single link, 3G- SDI dual link and quad link, HD- SDI quad link.
Transmission quality analysis function
As an SDI signal analysis function, in addition to monitoring of transmission errors, external synchronization phase difference display, lip sync measurement, SDI signal frequency deviation measurement function, an ancillary data analysis function with increased importance as a 4K video signal is also realized. With respect to IP signal measurement, monitoring transmission errors such as packet loss and the transmission quality (QoS) monitoring function such as packet jitter, which was difficult to observe by using IP, are strengthened.

Video analysis function
Various video signals include video signal waveform display, vector display, picture display 5 BAR display, CIE chromaticity diagram display, etc. In addition to the various displays, freeze error, Black error, gain error detection Functions etc. Quality control (QoE) of video signals Features are equipped.

Audio analysis function
For audio signals, SDI signals and audio signals superimposed on IP signals can be displayed on a level meter. Furthermore, Lissajous display, mute, clip error detection, loudness measurement, etc. are available. Audio format is compatible with L-PCM. Also, Dolby E, Dolby Digital, Dolby Digital Plus decode display is possible.
* Dolby and Dolby Digital, Dolby Digital Plus, Dolby E are registered trademarks of Dolby.

Eye pattern display
From SD-SDI to 12G-SDI
In the physical layer measurement of the SDI signal some eye pattern display, jitter display is possible.

External synchronization signal input
The phase difference and synchronization status of the SDI signal graphically based on the external synchronization signal (black burst, tri-level sync) can be confirmed. Also, since the input external sync signal can be displayed as a waveform, it is useful for early detection of problems owing to the synchronization signal.

Customizable layout
Various items such as video signal waveforms, vector waveforms, and pictures of input signals can be laid out in any position with your favorite size.

SDI signal generation function
SDI signal generation function can handle from HD-SDI to 12G-SDI. HD multiformat color bar and pattern corresponds to the multiple overlays of moving boxes and embedded audio, flat field pattern can be specified at any level, multiformat color bar 4K can be selected.

External monitor output
Since the measurement screen can be output as SDI and TMDS from the monitor output terminal, it can be displayed on an external SDI monitor or HDMI monitor with full HD resolution.
* It does not guarantee operation with all HDMI monitors.

Capture function
It equips with a screen capture function to capture the display screen as still image data and a frame capture function to capture 16 frames of data.

Time code display
The time code superimposed on SDI signals and IP signals can be displayed. The time code can also be used as the timestamp of the event log.

External remote terminal
The presets can be recalled by contact terminals, and switching input signals and tally displays and outputting alarms can be conducted.

Ethernet terminal
By connecting to the PC, remote operation by TELNET, file transfer by FTP, remote operation by SNMP and alarm notification, remote operation and monitoring from the browser via HTTP can be done.

Subtitle/closed caption decode display function
Japanese subtitles and CEA-608, CEA-708 closed caption, Teletext, OP47 subtitle superimposed on SDI signal can be decode displayed.
HDR
The HDR signal level monitoring and the level management at the assumed luminance (cd/m²) in a display considering OOTF are possible. The video signal waveform display corresponds to the HDR scale added to the IRE scale. In the cine zone display, the luminance distribution of the HDR area can be easily confirmed at the state where the SDR area is monochrome, the HDR is colored according to the brightness.

HDR zone display

Focus Assist
We developed a new focus detection algorithm based on nonlinear super-resolution technology; accordingly the focus with high sensitivity can be detected even with low-contrast images, which were conventionally difficult to detect.

Tally display
Serial communication enables to display camera ID, iris and tally.

Options

List of hardware options

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Type Number</th>
<th>LV5600</th>
<th>LV7600</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI INPUT</td>
<td>LV5600-SER01</td>
<td></td>
<td>LV5600-SER01</td>
<td>SD, HD, 3G SDI input *1</td>
</tr>
<tr>
<td>SDI INPUT/EYE</td>
<td>LV5600-SER02</td>
<td></td>
<td>LV5600-SER02</td>
<td>SD, HD, 3G SDI input and eye pattern display *1</td>
</tr>
<tr>
<td>DIGI/ANA AUDIO</td>
<td>LV5600-SER03</td>
<td></td>
<td>LV7600-SER03</td>
<td>Digital/analog Audio input/output and display</td>
</tr>
<tr>
<td>DOLBY</td>
<td>LV5600-SER04</td>
<td></td>
<td>LV7600-SER04</td>
<td>Dolby Digital, Dolby E decode function *2</td>
</tr>
<tr>
<td>IP INPUT</td>
<td>LV5600-SER05</td>
<td></td>
<td>LV7600-SER05</td>
<td>IP INPUT *1</td>
</tr>
</tbody>
</table>

*1 For LV5600, either LV5600-SER01 or LV5600-SER02 is selected, but either one of LV5600-SER01, LV5600-SER02, LV5600-SER05 is necessary. Either LV5600-SER01 or LV5600-SER02 is selected for LV7600, but either one of LV5600-SER01, LV5600-SER02, LV7600-SER05 is necessary.

*2 LV5600-SER03 is required for LV5600. LV7600 requires LV7600-SER03.

Software option list

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Type Number</th>
<th>LV5600</th>
<th>LV7600</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIO</td>
<td>Equipped with</td>
<td></td>
<td>Equipped with</td>
<td>AUDIO display function</td>
</tr>
<tr>
<td></td>
<td>LV5600-SER03</td>
<td></td>
<td>LV7600-SER03</td>
<td></td>
</tr>
<tr>
<td>CLOSED CAPTION</td>
<td>Standard equipment</td>
<td></td>
<td>Standard equipment</td>
<td>Japanese subtitles, EIA-608, 708, TELETEXT</td>
</tr>
<tr>
<td>CIE</td>
<td>Standard equipment</td>
<td></td>
<td>Standard equipment</td>
<td>CIE chart display function *3</td>
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<tr>
<td>HDR</td>
<td>LV5600-SER23</td>
<td></td>
<td>LV7600-SER23</td>
<td>HDR measurement function</td>
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<tr>
<td>TSG</td>
<td>LV5600-SER24</td>
<td></td>
<td>LV7600-SER24</td>
<td>SDI signal generation function</td>
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<tr>
<td>FOCUS ASSIST</td>
<td>LV5600-SER25</td>
<td></td>
<td>LV7600-SER25</td>
<td>Focus assist display Function</td>
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<tr>
<td>LAYOUT</td>
<td>LV5600-SER26</td>
<td></td>
<td>LV7600-SER26</td>
<td>Customizable layout function</td>
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<tr>
<td>TALLY</td>
<td>LV5600-SER27</td>
<td></td>
<td>LV7600-SER27</td>
<td>ID/iris/tally display function</td>
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<tr>
<td>4K</td>
<td>LV5600-SER28</td>
<td></td>
<td>LV7600-SER28</td>
<td>4K video signal correspondence function</td>
</tr>
<tr>
<td>12G-SDI</td>
<td>LV5600-SER29</td>
<td></td>
<td>LV7600-SER29</td>
<td>12G-SDI compatible *</td>
</tr>
</tbody>
</table>

* LV5600 requires LV5600-SER28, LV7600 requires LV7600-SER28.
LV5600-SER01, SDI Input
LV5600-SER02, SDI input with eye pattern
LV5600-SER01 is a unit that can display various SDI signals.
(LV5600, LV7600 common unit)
  • Video analysis function
Various types of video signals, in addition to a variety of displays
such as video signal waveform displays, vector display, picture
display, 5 BAR display, the CIE chromaticity diagram and
CINELITE II, video signal quality (QoE) freezes error, error black,
gamma error detection, etc. are equipped as standard equipment.
  • Audio analysis function
The audio signal embedded in SDI signals can be displayed on a
level meter.
  * Lissajous, surround and status can be displayed by adding
LV5600-SER03/LV7600-SER03
  • SDI signal data analysis function
The status display has an error detection function of CRC and
embedded sound. It also has an event log, data dump, phase
difference measurement functions, and can analyze SDI signals.
  • Screen capture function
A screen capture function to capture the display screen as still
image data and a frame capture function to capture 16 frames of
data are equipped. The captured data can be saved in BMP format
in comparison with the input signal, as well as the display on the
main body, and thus confirmation with the personal computer is
possible.
  • Frame Capture function
A frame capture function to capture 16 frames of the SDI signals is
equipped. There are two methods; one is to import them manually
and another is to take them automatically when an error occurs.
  * Only one frame is captured when an error occurs.
  • Frame capture viewer (free Windows software)
Search for data captured by the frame capture function, error
search, and export to CSV are possible.
  • Time code display
The time code superimposed on SDI signals and can be displayed.
The time code can also be used as the timestamp of the event log.
  • Input/output terminal
SDI input terminal BNC connector 4 terminal
SDI output terminal BNC connector 4 terminal
(main unit standard equipment)
Output relock signal The SDI signal of the input terminal is
relock output to the output terminals, respectively.
Output terminal 1 can switch the signal of the input terminal and
can relock output.
  • Audio level meter (8ch)
Embedded audio SMPTE ST 299, SMPTE ST 272
48 kHz/24 bit/L-PCM
Synchronization condition All are synchronized with the video
clock. All input SDI signals are synchronized.
  * When LV5600-SER03/LV7600-SER03 is added, it corresponds to
16 channels.

• Closed caption display function
CEA-608, CEA-708 closed caption, Teletext, OP47 subtitle
superimposed on SDI signal can be decode displayed.

• Japanese subtitle simplified display function
Japanese subtitles are simply displayed on the picture screen (HD,
SD, analog), portable subtitles are selected/displayed. Language 1
and 2 are selected/displayed.)
Approved standard

Japanese subtitle simplified display

• CIE chart display function
This is a chromaticity diagram display function corresponding to
display mode corresponds to CIE 1931 (xy display) and CIE 1976
(u’v’ display). Since the CIE chart display function can display two
color gamuts, the function can be used to suppress the color
gamut of BT.709 using the equipment compatible with BT.2020,
and to confirm the content that exceeds the color gamut of BT.709.
In color display, the chromaticity point is displayed using the color
(on the picture) in the video signal. The chromaticity point can be
measured at the point with the cursor.

xy chromaticity coordinate display
u’ v’ chromaticity coordinate display

xy coordinate color indication
A light blue is a measurement function cursor

Eye pattern display
Eye pattern display

Eye pattern display

Eye pattern display

Eye pattern display
LV5600-SER03 / LV7600-SER03,
Digital and analog audio I/O and displays (16 ch)
• Audio analysis
Lissajous display, surround display, mute, clip error detection, loudness measurement, etc. are now available. Various analysis display is also possible, and simultaneously display of 16 channels from one SDI signal and 4 channels from 4 SDI signals is possible.
• Embedded Audio
Approved standard SMPTE ST 299, SMPTE ST 272
48 kHz/24 bit/L-PCM
Synchronization condition All are synchronized with the video clock. All input SDI signals are synchronized.
• External input audio
Approved standard AES-3id
Synchronization condition All external input audio is synchronized with each other.
• Digital audio input/output Terminal
Input/output terminal DIN 1.0/2.3 connector
Number of Input/output terminals
Group A 4 terminals 8ch
Group B 4 terminals 8ch
Switching input/output Switching by each group (4 terminals 8 ch)
LV5600-SER04 / LV7600-SER04, Dolby decoding function
Decoding display of Dolby E, Dolby Digital, Dolby Digital Plus becomes possible by adding LV5600-SER 04 and LV7600-SER 04 to LV5600-SER 03 and LV7600-SER 03.

Audio display

LV5600-SER05 / LV7600-SER05,
IP input (SMPTE ST 2022-6, SMPTE 2110-20)
It corresponds the IP signal and the video signal of the 2K video format at SMPTE ST 2022-6 (non-compression) and SMPTE 2110-20 (non-compression).
• Video analysis function
Various types of video signals, in addition to a variety of displays such as video signal waveform displays, vector display, picture display, 5 BAR display, the CIE chromaticity diagram and CINELITEII, video signal quality (QoE) freezes error, error black, gamut error detection, etc. are equipped.
• Audio analysis function
The audio signals superimposed on IP signals can be displayed on a level meter.
• Transmission quality analysis function
Together with monitoring transmission errors such as packet loss, check sum error, packet discontinuity, the transmission quality (QoS) monitoring function such as packet jitter, which was difficult to observe by using IP, are strengthened.

• Capture function
A screen capture function to capture the display screen as still image data is equipped. It also has a frame capture function and can capture one frame of an active video period.
• Time code display
The time code superimposed on IP signals and can be displayed. The time code can also be used as the timestamp of the event log.
• Input video format
Corresponding IP standard SMPTE ST 2022-6, SMPTE ST 2110-20
 Supported format 1080 (60, 59.94, 50 I/P), 720 (60,59.94,50 I/P), 576 (50I) , 487 (59.94I), (YCBCRY/4:2:10 bit)
• Input audio format
Approved standard SMPTE ST 2022-6, SMPTE ST 2110-30
 Sampling frequency 48 kHz
 Quantization accuracy 24 bits
 Clock generation method Generated from video clock
 Synchronization condition Synchronized with video signals.
 The maximum 16 channels of IP audio separation channels are separated/displayed.
* L-PCM requires optional mounting of LV5600-SER 03 and LV7600-SER 03.
* Dolby correspondence requires optional mounting of LV5600-SER03/04, LV7600-SER03/04.
• Input terminal
Input terminal SFP +
 Number of terminals 2
 Approved standard 10GBASE-SR/10G BASE-LR
* SFP + transceiver is an optional item.
• Auxiliary data
Approved standard SMPTE ST 2110-40
LV5600-SER23 / LV7600-SER23,
HDR measurement function
In addition to HLG and PQ provided by ITU-R BT.2100, the level monitoring of the HDR signal corresponding to S-log3 and the level management at the assumed luminance (cd/m²) in a display considering OOTF are possible. The video signal waveform display corresponds to the HDR scale added to the IRE scale. In the cine zone display, the luminance distribution of the HDR area can be easily confirmed by displaying the SDR area with monochrome, and the HDR with a color according to the brightness.

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

Upper limit setting value
Reference setting value
Lower limit setting values

MAX CLL MAX FALL

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

- HDR Scale
By associating WFM and histogram with HDR scale, management of the video with brightness at the time of scene linearity is possible.

- HDR waveform display

1000cd/m² over
HDR area
SDR area

Example: 1000 cd/m² cursor value
Example: 100 cd/m² cursor value

- HDR point measurement
  - The crosshairs can be freely moved.
  - Up to 3 points can be measured simultaneously.

PO setting

HLG setting SYSTEM GAMMA OFF

HLG setting System Gamma On

S-Log3 setting System Gamma Off

- Approved standard
  ITU-R BT. 2100 (HLG, PQ), S-Log 3
  - Supported format
It corresponds to all except SD and XYZ input of SDI.

LV5600-SER24 / LV7600-SER24,
SDI signal generation function
SDI signal generation function can handle from HD-SDI to 12G-SDI.
Simplified UHDTV multi-format color bar and pattern corresponds to the multiple overlays of moving boxes and embedded audio, flat field pattern can be specified at any level, multiformat color bar 4K can be selected.
With the 4K pattern of 3G-SDI quad link, the phase of each link can be shifted and output, so confirmation of the pull-in margin of the receiving device is possible.

* When outputting 3G (DL) -4K signal and 3G (QL) -4K signal, LV 
S600-SER 28 is required for LV5600 and LV7600-SER 28 is required for LV7600.

* When outputting the 12 G-4K signal, LV5600 / LV5600 - SER28 
and LV5600-SER 29, LV7600 requires LV7600-SER 28 and 
LV7600-SER 29.

- Output pattern
  100% color bar, 75% color bar, HD multi format color bar, ARIB 4K 
multi format color bar (simple format), color raster, cross hatch, 10 
steps, limit lamp, Check field, lip sync pattern.

- Scroll
  Direction 8 directions (up and down, left and right, and 
combinations thereof)
  Speed range and unit 4 to 124 dots per frame (field), 4 dot unit.
  Moving Box ON/OFF
  Color WHITE, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, 
BLACK
  Speed 1 to 3

- Embedded Audio
  Number of superimposed channels maximum 16 ch 
ON/OFF of superimposition ON/OFF in audio group unit
  Audio level- 20 dBFS, -18 dBFS, 0 dBFS, Mute
  * For horizontal 4096/2048 pixel format at frame rates 60, 59.94, 30, 
and 29.97 Hz, only 8 channels are multiplexed.
LV5600-SER25 / LV7600-SER25, Focus assist function
This is a focus detection function realizing a new algorithm based on nonlinear super resolution technology. The focus can be detected with high sensitivity even with low-contrast images, which were conventionally difficult to detect. In addition, sensitivity can be selected from 5 levels according to the video scene.

**Focus assist display**

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

LV5600-SER26 / LV7600-SER26, Customizable layout function
- Customizable layout function
  Various items such as video signal waveforms, vector waveforms, and images of input signals can be laid out in any position with your preferred size. Multiple input signals up to 4 inputs can be displayed simultaneously, or one input signal can be displayed on multiple screens.

**Customizable layout setting screen**

LV5600-SER27 / LV7600-SER27, Display channel function
1SDI input signals of 1 to 4 input terminals can be allocated to A to D display channels. At this time, by allocating one SDI input signal to multiple display channels, monitoring video signals in multiple display formats is possible.

For example, displaying the signal input to SDI input 1 as component video waveform can be displayed on display channel A and the composite video waveform can be displayed on display channel B.

* It is not possible to monitor errors in the background of input channels not assigned to display channels.

**Display channel display image**

LV5600-SER27 / LV7600-SER27, ID/iris/tally display function
Serial communication RS-422/485 terminals enable to display camera ID, and tally. Fast switching of tally display by remote terminal is also possible.

**ID/iris/tally display screen**

LV5600-SER28 / LV7600-SER28, 4K video signal compatible function
1It supports 4K video format signals of 3G-SDI dual link and quad link, HD- SDI quad link.

LV5600-SER29 / LV7600-SER29, 12G-SDI compatible
It is compatible with 12G-SDI single link. Also, in the 4K video format, switching up to 4 displays can be done with 12G-SDI single link input, and switching up to 2 displays can be done with 3G-SDI dual link.


LV7290, Remote Controller
The LV7290 remote controller connects to the Ethernet port on the rear panel of the LV5600/LV7600 and can be used to remotely control the LV5600/LV7600. A single unit can connect and control up to eight LV5600/LV7600s.

Dimensions and weight: ≤ 482 (W) X 44 (H) X 110 (D) mm (excluding protrusions), 1.2 kg
### Specifications

#### SDI video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC dB 4:2:2</td>
<td>10bit</td>
<td>1720 x 1080</td>
<td>59.94 i</td>
<td>SMPTE ST 250</td>
</tr>
</tbody>
</table>

#### HD video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC dB 4:2:2</td>
<td>10bit</td>
<td>1280 x 720</td>
<td>59.94 i</td>
<td>SMPTE ST 202.1</td>
</tr>
</tbody>
</table>

#### 3G-A video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC dB 4:2:2</td>
<td>10bit</td>
<td>1920 x 1080</td>
<td>59.94 i</td>
<td>SMPTE ST 274</td>
</tr>
</tbody>
</table>

#### 3G-B-DL, HD(DL) video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC dB 4:2:2</td>
<td>10bit</td>
<td>1920 x 1080</td>
<td>59.94 i</td>
<td>SMPTE ST 272</td>
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</table>

#### 3G-B-DS video signal format and standard

<table>
<thead>
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<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
</table>
### 12G video signal format and standard (2 sample interleave)

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC, P, 4:2:2</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
<tr>
<td>RGB, 4:4:4</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
</tbody>
</table>

* It corresponds to TYPE 1 of 12G-SDI.

### HD(QL) video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC, P, 4:2:2</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
</tbody>
</table>

* 2K model requires SER 28 separately.
* The phase difference between links (d) is automatically corrected and displayed to 100 clocks (about 0.67 µs).

### 3G(DL)-2K video signal format and standard

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame/Field Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC, P, 4:2:2</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
<tr>
<td>RGB, 4:4:4</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
</tbody>
</table>

* The phase difference between links (d) is automatically corrected and displayed to 100 clocks (about 0.67 µs).
* Links correspond to 3G-A, 3G-B-DL.

### 3G(DL)-4K video signal format and standard (Square)

<table>
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<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame Frequency / Scanning</th>
<th>Compliant Standard</th>
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<tbody>
<tr>
<td>YC, P, 4:2:2</td>
<td>10bit</td>
<td>3430x1610</td>
<td>3840x1440, 3840x3840 (IP)</td>
<td>SMPTE ST 2036-1, 2034-1</td>
</tr>
</tbody>
</table>

### 3G(DL)-4K video signal format and standard (quad)

<table>
<thead>
<tr>
<th>Color System</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
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<tr>
<td>YC, P, 4:2:2</td>
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</tr>
</tbody>
</table>

* The phase difference between links (d) is automatically corrected and displayed to 100 clocks (about 0.67 µs).
* Links correspond to 3G-B-DS.
3G(4L) video signal format and standard (2 sample interleave)

<table>
<thead>
<tr>
<th>Color</th>
<th>Quantization</th>
<th>Image</th>
<th>Frame Frequency / Scanning</th>
<th>Compliant Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>YC, C=±2:2</td>
<td>12 bit</td>
<td>30 kHz</td>
<td>SMPTE ST 425-5, SMPTE ST 2046-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 bit</td>
<td>30 kHz</td>
<td>SMPTE ST 425-5, SMPTE ST 2046-1</td>
<td></td>
</tr>
</tbody>
</table>

* The phase difference between links is automatically corrected and displayed to 100 clocks (about 0.67 μs).

* Links correspond to 3G-A, 3G-B-DL.

IP input signal format (LV5600-SER05, LV7600-SER05)

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</tr>
</tbody>
</table>

* Corresponding IP standard SMPTE ST 2022-6, SMPTE ST 2110-20.

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

Headphone output terminal
Output terminal LV5600 3.5 mm Mini jack 1 terminal (stereo)
LV7600 standard jack 1 terminal (stereo)
Output signal On the screen of the displayed audio signal, arbitrary 2 ch (Downmixed Lt, Rt is also acceptable)

Monitor output terminal
SDI output terminal
Function Output screen for SDI monitor
Output terminal BNC terminal
Number of output terminals 1
Output signal Output liquid crystal display screen is output with HD, 3G-A, 3G-B-DL.
1920x1080 60, 59.94, 50 I/P, YC, C=±2:2 (10 bits)

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

Control terminal
USB terminal
Terminal shape Standard A
Number of terminals 2
Standard USB 2.0
Compatible device USB memory, USB mouse, touch panel type monitor

For Ethernet terminal control
Approved standard IEEE802.3
Supported protocols TELNET, FTP, SNMP, HTTP, SNTP
Input/output terminals RJ-45
Function Remote operation with an external PC or remote controller, File transfer, get status information
Types 10Base-T, 100Base-TX, 1000Base-T

Remote terminal
Terminal shape D Sub 15 pins (female)
Number of terminals 1
Control signal LV- TTL level (LOW active)
Function Preset recall, input signal switching, alarm output, tally
Alarm output When a format alarm, various errors, fan abnormality, or internal temperature occurs
RS-422/485 terminal (LV5600-SER27/LV7600-SER27)
Function Reception of tally, camera ID, camera iris signal
Terminal shape RJ-45
Number of terminals 2
Display (LV5600)
- Liquid crystal display: 7 type TFT color liquid crystal
- Resolution: 1920x1080
- Refresh rate: 60 Hz, 59.94 Hz, 50 Hz
  (Free run or frequency synchronization to external synchronization signal)
- Touch panel: Electrostatic capacity type touch panel

General specifications
- Operating temperature range: 0 to 40 °C
- Operating humidity range: 85% RH or less (with no condensation)
- Performance guarantee temperature range: 10 to 30 °C
- Usage environment: Indoors
- Usable altitude: up to 2,000 m
- Overvoltage category: II
- Pollution degree: 2
- Power supply:
  - Voltage: AC 90 to 250 V, 50/60 Hz
  - Power consumption: TBD W max.

Dimensions
- LV5600: 215 (W)x132 (H)x300 (D) mm
  (No protruding part included)
- LV7600: 426 (W)x44 (H)x300 (D) mm
  (No protruding part included)

Weight
- LV5600: TBD kg max. (Including options, accessories not included)
- LV7600: TBD kg max. (Including options, accessories not included)

Accessories
- Power cord: x1
- Cover inlet stopper: x1
- D sub 15 pin connector: x1
- D sub 15 pin connector cover: x1
- Manual (CR-ROM): x1
- D sub 37 pin connector cover: x1 (LV5600-SER03/LV7600-SER03)
- Options:
  - Remote controller: LV7290 (Ethernet connection)
  - Rack mount adapter (for LV5600): LR2560
  - 10 GbE multimode SFP + transceiver: AFBR-709 SMZ
  - 10 GbE single mode SFP + transceiver: AFCT-7395 SMZ
  - AC adapter: SPU61A-105

LR2560, RACKMOUNT ADAPTER
The LR2560 is a dual rack mount adapter used to install LV5600 waveform monitors in a 19-inch EIA standard rack. It allows two LV5600s to be installed side by side.

LC2565, BLANK PANEL
The LC2565 is a blank panel for the LR2560 rack mount adapter. Use it when installing a single LV5600 waveform monitor in the LR2560.

SFP + Transceiver
(For LV5600-SER05/LV7600-SER05)
AFBR-709SMZ (10 GbE multi mode)
AFCT-7395SMZ (10 GbE single mode)