



# CLUX-SDI2HS

SDI to HDMI Scaler with Audio



Operation Manual



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## SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

## REVISION HISTORY

| VERSION NO. | DATE DD/MM/YY | SUMMARY OF CHANGE                     |
|-------------|---------------|---------------------------------------|
| VR0         | 25/03/11      | Preliminary Release                   |
| VR1         | 28/09/11      | Add Support Timing                    |
| VS2         | 11/07/12      | Updated format/diagrams/SDI standards |
| VS3         | 19/07/12      | First release                         |
|             |               |                                       |



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## 1. INTRODUCTION

The SDI to HDMI Scaler allows SD, HD and 3G-SDI signals to be shown on HDMI and SDI display. This means that it is now easier for professionals to distribute and extend their SDI signal while giving the ability to display work on HDMI displays. Furthermore, thanks to coaxial (S/PDIF) and L/R audio outputs users can output audio in both digital and analog formats while the loop-through 3G-SDI design benefits users by letting them simultaneous show content on both SDI and HDMI displays.

## 2. APPLICATIONS

- Broadcast video signal to HDMI/SDI display
- Broadcast video signal extension
- 3G SDI signal conversion into HDMI signal

## 3. PACKAGE CONTENTS

- SDI to HDMI Scaler with Audio
- 5V/2.6A DC power adaptor
- Operation Manual

## 4. SYSTEM REQUIREMENTS

Input source equipment such as SNG camera or any SDI signal with connection cables and output to LCD TV or SDI monitor with connection cables.

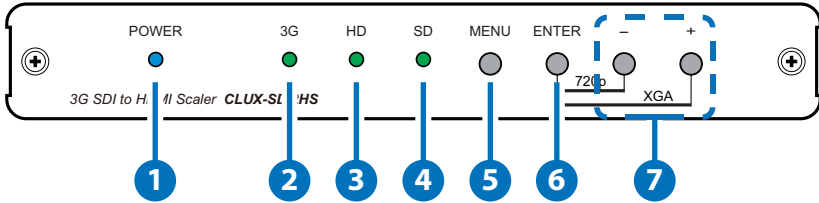
## 5. FEATURES

- Supports SD-SDI, HD-SDI and 3G-SDI input signals with auto-detection
- Supports HDMI and SDI (bypass) output simultaneously
- SDI interface operates at bitrates of 2.970 Gbit/s, 2.970/1.001 Gbit/s, 1.485 Gbit/s, 1.485/1.001 Gbit/s and 270 Mb/s
- Scale any SDI input signal to HDMI:
  1. PC timings – SVGA@60 ~ WUXGA@60 (RB)
  2. HDTV timings – 480p/576p ~ 1080p@50/60
- Supports SDI input modes:
  1. SD-SDI (SMPTE 259M-C, at bitrates of 270 Mbit/s)
  2. HD-SDI (SMPTE 292M, at bitrates of 1.485 Gbit/s and 1.485/1.001 Gbit/s)
  3. 3G-SDI (SMPTE 424M/425M-AB, at bitrates of 2.970 Gbit/s and 2.970/1.001 Gbit/s)
- Equalized and re-clocked loop output
- Alternative audio output to coaxial and analog 2 CH
- Integrated audio de-embedder for up to 8 channels of 48 kHz audio
- Supports SDI input/output distance up to 100 meters (3G-SDI), 200 meters (HD-SDI), or 300 meters (SD-SDI)

*Note: Tested with Belden 1694A Cable. Operating distances may vary if used with cables of different specifications.*

## 6. OPERATION CONTROLS AND FUNCTIONS

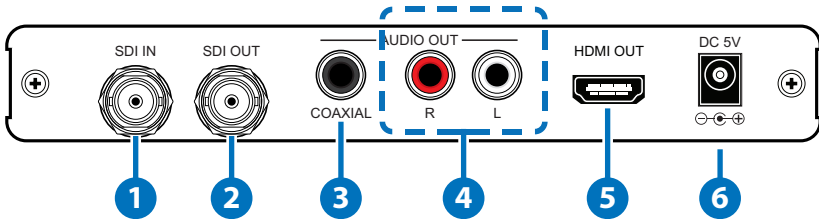
### 6.1 Front Panel



- 1 Power LED:** The LED will illuminate blue when the device is connected to a power supply.
- 2 3G LED:** This LED illuminate green when a 3G-SDI input signal is detected.
- 3 HD LED:** This LED illuminate green when a HD-SDI input signal is detected.
- 4 SD LED:** This LED illuminate green when a SD-SDI input signal is detected.
- 5 MENU:** Press this button to enter/exit the On-Screen Display (OSD) menu.
- 6 ENTER:** Press this button to confirm your selection. Press both ENTER and 'Minus' (-) buttons together to switch the display output to 720p or press both ENTER and 'Plus' (+) buttons together to switch to XGA. After making the selection, press ENTER to confirm the output format.
- 7 -/+:** Press these buttons to move up or down the OSD selections.



## 6.2 Rear Panel



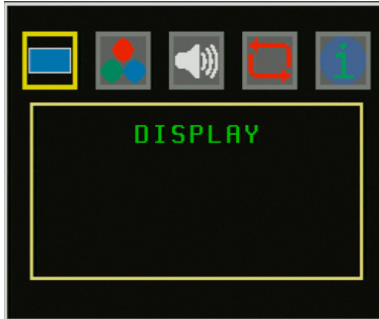
- 1 SDI IN:** Connect to the SDI output of the SDI source device. Accepts SD,HD or 3G SDI signals.
- 2 SDI OUT:** Provides a 'loop-through' SDI signal output for connection to a SDI display.
- 3 AUDIO OUT COAXIAL:** Digital Audio output (SP/DIF). Connect to an amplifier or recording device with a suitable digital coaxial input.
- 4 AUDIO OUT R/L:** Analogue audio output (L/R Stereo). Connect to an amplifier or recording device with a suitable analogue input.
- 5 HDMI Out:** Connect a HDMI equipped display or to a DVI Display with a HDMI to DVI cable.
- 6 DC 5V:** Plug the 5V DC power supply into the unit and connect the adaptor to an AC outlet. The 'POWER' LED will illuminate blue when the power is ON.

### 6.3 OSD Menu and Function List

| 1st Layer | 2nd Layer | 3rd Layer        |
|-----------|-----------|------------------|
| Display   | Output    | NATIVE           |
|           |           | 800 x 600 @60    |
|           |           | 1024 x 768 @60   |
|           |           | 1280 x 768 @60   |
|           |           | 1360 x 768 @60   |
|           |           | 1280 x 800 @60   |
|           |           | 1280 x 1024 @60  |
|           |           | 1440 x 900 @60   |
|           |           | 1400 x 1050 @60  |
|           |           | 1680 x 1050 @60  |
|           |           | 1600 x 1200 @60  |
|           |           | 1920 x 1200 @60  |
|           |           | 720 x 480p @60   |
|           |           | 1280 x 720p @60  |
|           |           | 1920 x 1080p @60 |
|           |           | 720 x 576p @50   |
|           |           | 1280 x 720p @50  |
|           |           | 1920 x 1080p @50 |
|           |           | 1920 x 1080i @60 |
|           |           | 1920 x 1080i @50 |
|           | Size      | Full             |
|           |           | Over Scan        |
|           |           | Under 1          |
|           |           | Under 2          |
|           |           | Letter Box       |
|           | Exit      | Pan Scan         |
|           |           |                  |

|               |                                       |             |
|---------------|---------------------------------------|-------------|
| Color         | Contrast                              | 0~255 (105) |
|               | Brightness                            | 0~192 (96)  |
|               | R                                     | 0~255 (128) |
|               | G                                     | 0~255 (128) |
|               | B                                     | 0~255 (128) |
|               | R Offset                              | 0~63 (32)   |
|               | G Offset                              | 0~63 (32)   |
|               | B Offset                              | 0~63 (32)   |
|               | Exit                                  |             |
| SDI Audio     | Group 1                               |             |
|               | Group 2                               |             |
|               | Group 3                               |             |
|               | Group 4                               |             |
|               | Auto                                  |             |
|               | Off                                   |             |
| Factory Reset | Yes                                   |             |
| Information   | Input Timing, Output Timing & Version |             |

### 6.3.1 Display



- **Output Timings:** There are a total of 20 timings available for selection.
- **Size:** Adjusts the displayed screen size from Full, Over Scan, Under Scan, Letter box or Pan scan to fit the current display size or aspect ratio.

### 6.3.2 Color



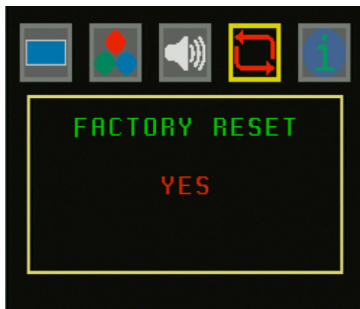
- Adjusts the screen's RGB Color, Contrast and/or Brightness.

### 6.3.3 SDI Audio



- Selects the SDI audio output from 4 different audio groups and each group's 2CH contents or can be set to 'Auto' which contain up to 7.1 Channels of audio (dependent on the input source signal). If no audio output is required, the audio can also be muted by selecting 'OFF'.

### 6.3.4 Factory Reset



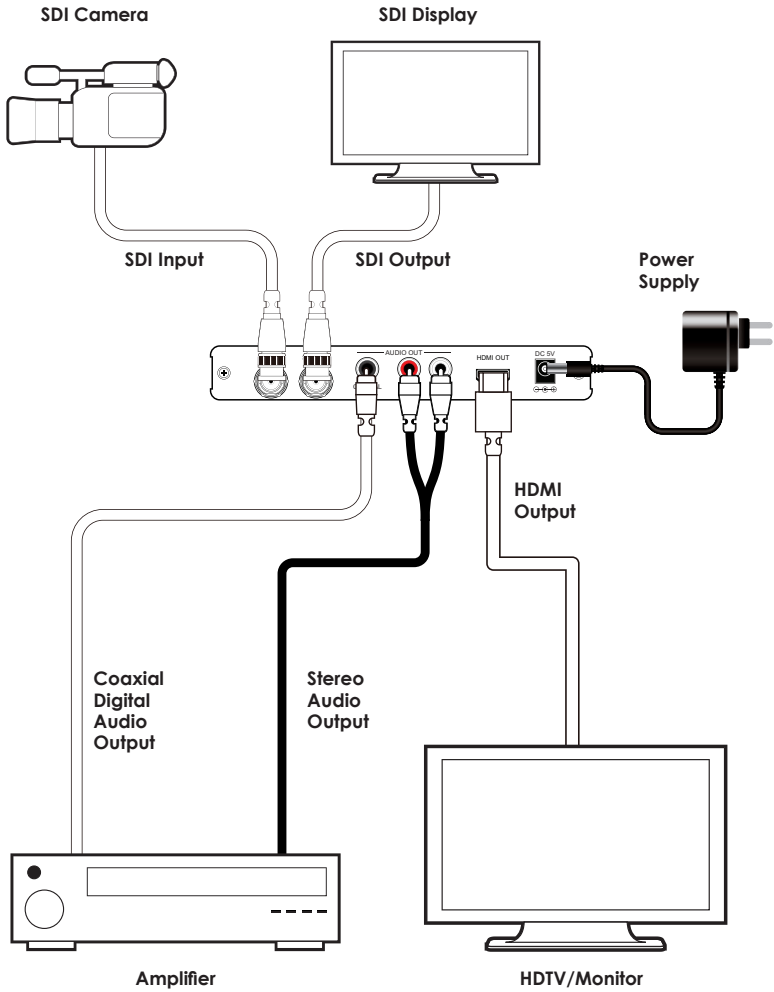
- Select YES to return the unit to the factory settings. The default Factory Setting for Video display is 'Full Screen' (1280×720@60Hz), Color setting's factory default rate is the same as shown on the OSD and SDI audio is 'AUTO'.

### 6.3.5 Information



- Displays the source input format, the output display format and the unit's software version.

## 7. CONNECTION DIAGRAM





## 8. SPECIFICATIONS

|                               |  |
|-------------------------------|--|
| <b>SMPTE Standard</b>         | 425M Level A & B, 424M, 292M, 259M-C   |
| <b>SDI Transmission Rates</b> | 2.970 Gbps, 2.970/1.001 Gpbs<br>1.48 5 Gbps, 1.485/1.001Gbps and 270 Mbps  |
| <b>Video Bandwidth</b>        | 165 MHz/link   |
| <b>Input</b>                  | 1×BNC (SD/HD/3G-SDI)   |
| <b>Output</b>                 | 1×BNC (SD/HD/3G-SDI), 1×HDMI,<br>1×Coaxial, 1×L/R (RCA)  |
| <b>SDI Timing Support</b>     | SD-SDI:<br>SMPTE 259M-C, 270 Mbit/s<br>HD-SDI:<br>SMPTE 292M, 1.485 & 1.485/1.001 Gbit/s<br>3G-SDI:<br>SMPTE 424M/425M-AB, 2.970 &<br>2.970/1.001 Gbit/s |
| <b>HDMI Timing Support</b>    | 480i, 576i, 720p@50/59.94/60<br>1080i@50/59.94/60<br>1080p@23.98/24/25/29.97/30/50/59.94/60  |
| <b>Power Supply</b>           | 5 V DC/ 2.6 A (US/EU standards, CE/FCC/UL certified)   |
| <b>ESD Protection</b>         | Human-body Model:<br>± 8kV (air-gap discharge)<br>± 4kV (contact discharge)  |
| <b>SDI Cable Distance</b>     | 3G/HD/3G-SDI up to 100 /200/300 meters with BELDEN 1694A Cable   |
| <b>Dimension</b>              | 180mm (W)×142mm (D)×25mm (H)   |
| <b>Weight</b>                 | 460g   |
| <b>Chassis Material</b>       | Aluminum   |
| <b>Silkscreen Color</b>       | Gray   |
| <b>Operating Temperature</b>  | 0 °C~40 °C/32 °F~104 °F  |
| <b>Storage Temperature</b>    | -20°C ~ 60°C / -4°F ~ 140°F  |
| <b>Relative Humidity</b>      | 20~90% RH (Non-condensing)   |
| <b>Power Consumption</b>      | 4W   |



## 9. ACRONYMS

| ACRONYM    | COMPLETE TERM                    |
|------------|----------------------------------|
| <b>3G</b>  | Bandwidth 2.97G bps $\approx$ 3G |
| <b>SDI</b> | Serial Digital Interface         |
| <b>HD</b>  | High Definition                  |







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