



LINKBRIDGE™ 18G/4K HDMI SCALER with Audio Insertion & Extraction



LB-H2SCL

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SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATION

PLEASE OBSERVE THE FOLLOWING SAFETY PRECAUTIONS

SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection system is highly recommended in order to protect and extend the life of your equipment.

SAFETY INFORMATION

Do not use this device near water/liquids. This device should not be exposed to dripping and splashing or liquids.

Clean only with dry cloth.

Do not use solvents such as paint thinners and acetone to clean external casing. Such agents will remove any labels on the device.

Do not block any ventilation openings.

Do not install near any sources of intense heat such as radiation, boilers, or other equipment that produce heat.

Not intended for use/storage in close proximity of critical medical supplies such as those that might come into direct contact with patients or medical staff.

Protect the power cord from being pinched or damaged at receptacles and the point of exit from the device.

Only use attachment /accessories specified by manufacturer. If you have any questions about the compatibility of an accessory, contact your dealer.

In case liquid spillage on device, unplug main power cord and contact your dealer. Continuous use in this case may result in fire or electric shock.

To reduce the risk of electric shock, do not touch connectors with wet hand.

Only power with the marked voltage on the device. Any other voltage can cause fire or electric shock.

Do not use the device if an abnormality occurs. If any smoke or odor becomes apparent, unplug the power cord and contact your dealer. Do not try to repair the device yourself.

Avoid using physically damaged devices. If your device metal housing is seriously physically damaged, the internal components may function abnormally. Contact your dealer.

Do not install the device in an area heavy with dust or constant high humidity. Operating the device in this case may result in fire or electric shock.

Only use supplied power supply. For a list of other compatible power supplies, contact your dealer.

Install this device in a secure location where it cannot be easily pushed or knocked over.

TABLE OF CONTENTS		
1.0	PRODUCT DESCRIPTION	5
2.0	OPERATION CONTROL AND FUNCTIONS	7
2.1	FRONT/REAR PANEL	7
3.0	CONNECTION DIAGRAM	23
4.0	SPECIFICATIONS	24
5.0	MAINTENANCE AND TROUBLESHOOTING	25
5.1	SERVICE PROCEDURE	26
5.2	REPLACEMENT POLICY	26
6.0	RETURN AND REPAIR SERVICE	26
7.0	LIMITED WARRANTY	27

The LB-H2SCL Scaler accepts and outputs a wide range of resolutions up to 4K@60Hz (4:4:4, 8-bit) with simultaneous audio embedding and de-embedding of digital (HDMI or optical) or analog audio. Integrated EDID and HDCP management options allow for control over the way connected sources and displays detect the unit. The scaled HDMI output is powered by a high quality single-pass scaling engine with the ability to adjust the image with a number of fine tuning options including: contrast, brightness, hue, saturation, sharpness, noise reduction, and RGB levels. 3-D motion adaptive de-interlacing and frame rate conversion is supported as well.

The HDMI input and output supports passing up to LPCM 7.1 digital audio as well as Bitstream and HD Bitstream audio formats. Audio embedding and de-embedding is also available with the included digital optical and analog stereo audio inputs and outputs (LPCM 2.0 only). Shortcut keys are provided to quickly change the output resolution to 1080p@60Hz or XGA when needed for quick connection to a display or for troubleshooting purposes.

This is an ideal device to integrate previously incompatible sources and displays in your boardroom, classroom, or home. This unit is controlled via a comprehensive On-Screen Display (OSD) menu that provides the user with easy access to all settings.

FEATURES:

- HDMI input and output with 18Gbps (600MHz) 4K UHD support
- DVI 1.0 compliant with the use of an HDMI-DVI adaptor
- HDCP 2.2 and HDCP 1.x compliant
- 1 HDMI input and 1 HDMI output
- 1 Digital Optical Audio (TOSLINK) and 1 Analog Stereo Audio input
- 1 Digital Optical Audio (TOSLINK) and 1 Analog Stereo Audio output
- HDMI input supports resolutions up to 4096×2160p@60Hz (4:4:4, 8-bit)
- Scaled HDMI output supports resolutions from 640×480@60Hz up to 4096×2160p@60Hz (4:4:4, 8-bit)
- Supports pass-through of many audio formats including LPCM 2.0/5.1/7.1, Bitstream, and HD Bitstream via HDMI
- Supports audio embedding and de-embedding via digital optical and analog stereo audio inputs and outputs (LPCM 2.0 only)
- Supports frame rate conversion, 3-D motion adaptive de-interlacing, and 3:2/2:2 pull-down detection and recovery
- Supports output adjustments to contrast, brightness, hue, saturation, sharpness, RGB levels and aspect ratio
- Integrated EDID and HDCP management
- Controllable via front panel buttons with comprehensive OSD

IDEAL FOR

- Entertainment Rooms & Home Theaters
- Showrooms & Demo Rooms
- Lecture Hall Presentations
- Public Commercial Displays
- AV Equipment & Control Rooms

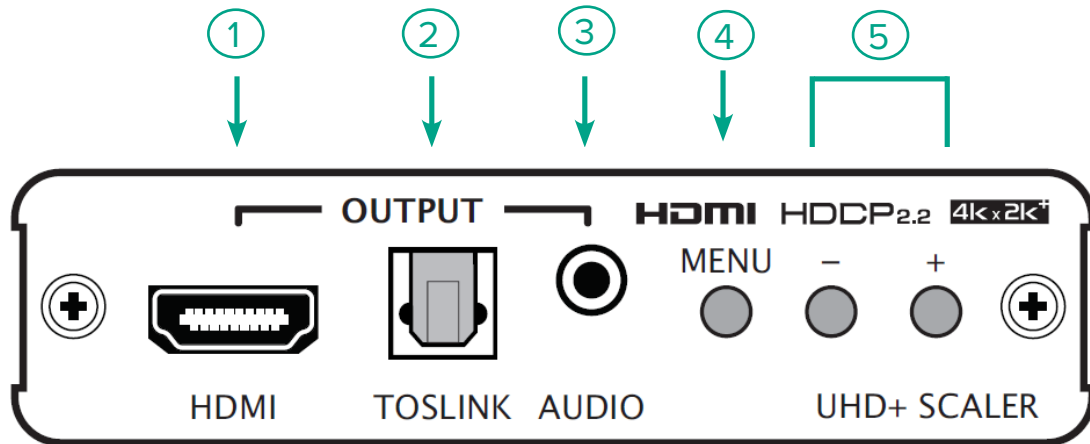
PACKAGE CONTENTS

- 1×HDMI to HDMI Scaler
- 1×5V 2.6A DC Power Adapter
- 1×Operation Manual

SYSTEM REQUIREMENTS

- HDMI input source equipment such as a media player, video game console or set-top box.
- HDMI receiving equipment such as an HDTV, monitor or audio amplifier.
- The use of “Premium High Speed HDMI” cables is highly recommended.

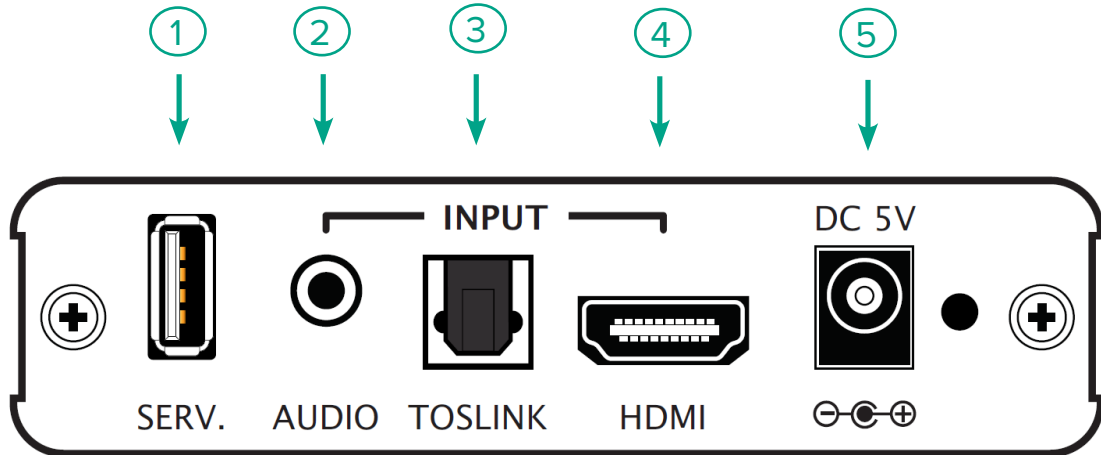
FRONT PANEL



- ① **HDMI Output:** Connect to an HDMI TV, monitor or amplifier for digital video and audio output.
- ② **TOSLINK INPUT:** Connect to powered speakers or an amplifier for digital audio output using an appropriate optical cable.
- ③ **AUDIO INPUT:** Connect to powered speakers or an amplifier for stereo analog audio output.
- ④ **MENU:** Press to enter the OSD menu, to confirm a selection within the OSD or to go deeper into a menu item. To back out from menu items or exit the menu, select the “Exit” option.
- ⑤ **PLUS (+) & MINUS (-):** Press to move up and down or adjust selections within menus.

Note: Pressing “MENU” and “+” together will reset the output resolution to XGA (1024×768@60Hz). Pressing “MENU” and “-” together will reset the output resolution to 1080p@60Hz. Pressing and holding the “-” button while powering the unit on will perform a factory reset.

REAR PANEL



- ① **SERVICE:** This port is reserved for firmware update use only.
- ② **AUDIO INPUT:** Connect to the stereo analog output of a device such as an audio player or PC.
- ③ **TOSLINK INPUT:** Connect to the optical audio output of a device such as a media player or game console using an appropriate optical cable.
- ④ **HDMI INPUT:** Connect to HDMI source equipment such as a media player, game console or set-top box.
- ⑤ **DC 5V & LED:** Plug the 5V DC power adapter into this port and connect it to an AC wall outlet for power. The LED will illuminate to indicate the unit is on and receiving power.

OSD Menu

All functions of this unit can be controlled by using the OSD (On Screen Display) which is activated by pressing the MENU button on the front of the unit. Use the + (Plus), - (Minus), and MENU buttons to navigate the OSD menu. Select the “EXIT” option to back out from any menu item and then select it again to close the menu.

MAIN MENU
Video
Picture
Audio
OSD
EDID
Reset
FW Update
Information
Exit

The individual functions of the OSD will be introduced in the following section. Items marked in BOLD are the factory default settings.

VIDEO	
2 ND LEVEL	3 RD LEVEL
OUTPUT	640X480@60
	800X600@60
	1024×768@60
	1280X768@60
	1280×800 60
	1280×1024 60
	1360×768 60
	1400×1050 60
	1440×900 60
	1600×1200 60
	1680×1050 60
	1920×1200 60 RB
	2560×1600 60
	1920×1080 60
	1280×720 60
	2048×1080 50
	2048×1080 60
	2560×1440 60 RB
	720×480P 60
	1280×720P 60
	1920×1080P@60
	720×576P 50
	1280×720P 50
	1920×1080P 50
	1920×1080P 24
	1920×1080P 25
	1920×1080P 30
	2560×1080P 50
	2560×1080P 60

VIDEO	
2 ND LEVEL	3 RD LEVEL
OUTPUT (CON'T)	3840×2160P 24
	3840×2160P 25
	3840×2160P 30
	3840×2160P 50
	3840×2160P 60
	4096×2160P 24
	4096×2160P 25
	4096×2160P 30
	4096×2160P 50
	4096×2160P 60
	NATIVE
ASPECT	OVER SCAN
	FULL
	BEST FIT
	PAN SCAN
	LETTER BOX
	UNDER 2
	UNDER 1
	FOLLOW IN
ZOOM MODE	
ZOOM MODE RATIO	60~180 (100)
HDCP	OFF
	REFER TO SOURCE
	REFER TO DISPLAY
NO SIGNAL COLOR	BLACK
	WHITE
	BLUE
	RED
	GREEN

VIDEO		
2 ND LEVEL	3 RD LEVEL	4 TH LEVEL
BLANK	OFF	
	ON	
FREEZE	OFF	
	ON	
AUTO SYNC OFF	OFF	
	30S	
	60S	
	3 MIN	
	5 MIN	
	10 MIN	
OUTPUT SETTING	BYPASS ENABLE	OFF
		ON
	OUTPUT 4K(6G) YUV420	OFF
		ON
	EXIT	
EXIT		

1. **Output:** Selects the output resolution to use. Selecting “Native” will make the unit automatically select an output resolution based on the detected EDID of the connected display.
2. **Aspect:** Selects the aspect ratio to use when outputting the source. “Full” stretches the source to fill the output resolution, regardless of the original aspect ratio, while “Best Fit” will always attempt to retain the original source’s correct aspect ratio by adding black bars if necessary. “Follow In” centers the source on the screen, without any scaling (1:1 pixel reproduction). Selecting “Zoom Mode” activates the free-scaling zoom mode which allows for a zoom/shrink level to be manually selected using the “Zoom Mode Ratio” setting.

Note: Some video noise might be present when using the “Follow In” mode if the selected output resolution is 4096×2160@60Hz and the source is at, or above, 1680×1050 but below 3840×2160.

3. **Zoom Mode Ratio:** Sets the percentage amount to zoom or shrink the image when “Zoom Mode” is active.
4. **HDCP:** Selects the HDCP logic to use with the HDMI input. Setting this to “Off” will completely disable HDCP support on that input.
5. **No Signal Color:** Selects the free run color to use when no live input source is detected.
6. **Blank:** Allows for the output video and audio to be blanked/ muted.
7. **Freeze:** Allows for the output video to be frozen. While the output is frozen, audio output will also be muted.
8. **Auto Sync Off:** Sets the amount of time to continue outputting sync with the free run color if there is no live source and no operations have been executed on the unit. Setting this to “OFF” forces the unit to always output sync.
9. **Output Setting:** Allows for configuring the following special video signal handing functions.

- **Bypass Enable:** Enables or disables source bypass mode. When this is enabled, the video signal will be passed without modification.

- **Output 4K(6G) YUV420:** Enables or disables the 4K@50/60 4:4:4 to 4K@50/60 4:2:0 color space conversion function.

Note: Enabling Bypass mode will grey-out/disable the following Video Menu sections: Aspect, Zoom Mode Ratio, Freeze, Blank, and the entire Picture Menu section.

PICTURE	
2 ND LEVEL	3 RD LEVEL
Color Gain R	0 ~ 1023 (512)
Color Gain G	0 ~ 1023 (512)
Color Gain B	0 ~ 1023 (512)
Color Offset R	0 ~ 1023 (512)
Color Offset G	0 ~ 1023(512)
Color Offset B	0 ~ 1023 (512)
Brightness	0 ~ 60 (30)
Contrast	0 ~ 60 (30)
Hue	0 ~ 60 (30)
Saturation	0 ~ 60 (30)
Sharpness	0 ~ 60 (30)
Noise Reduction (NR)	OFF
	Low
	Middle
	High
	Auto
Reset Picture	
Exit	

1. **Color Gain R/G/B:** These controls provide control over the red, green, and blue color gain level of the scaled output.
2. **Color Offset R/G/B:** These controls provide control over the red, green, and blue color offset level of the scaled output.
3. **Brightness:** Provides control over the overall brightness of the scaled output image.
4. **Contrast:** Provides control over the overall contrast of the scaled output image.
5. **Hue:** Provides control over the hue shift of the scaled output image.
6. **Saturation:** Provides control over the color saturation level of the scaled output image.
7. **Sharpness:** Provides control over the amount of sharpness processing to apply to the scaled output image.
8. **Noise Reduction (NR):** Provides control over the aggressiveness of the digital noise reduction processing when applied to the scaled output image. Selecting “Off” disables all noise reduction processing.
9. **Reset Picture:** Selecting this will reset all picture settings back to their factory defaults.

AUDIO	
2 ND LEVEL	3 RD LEVEL
SOURCE	AUTO
	TOSLINK
	ANALOG
VOLUME	0 ~ 100 (80)
HDMI MUTE	OFF
	ON
TOSLINK MUTE	OFF
	ON
ANALOG MUTE	OFF
	ON
RESET AUDIO	
EXIT	

OSD	
2 ND LEVEL	3 RD LEVEL
H POSITION	0 ~ 60 (30)
V POSITION	0 ~ 60 (30)
TIMER	OFF
	5S
	10S
	15S
	20S
	25S
	30S
	35S
	40S
	45S
	50S
55S	
60S	
TRANSPARENT	0~50 (50)
DISPLAY	OFF
	ON
	5S
	10S
RESET OSD	
EXIT	

1. **H Position:** Set the horizontal position of the OSD menu.
2. **V Position:** Set the vertical position of the OSD menu.
3. **Timer:** Set the length of time to wait before automatically turning off the OSD menu if there is no user interaction. The timer may also be disabled.
4. **Transparent:** Set the transparency level of the OSD menu. A setting of 50 is completely opaque.
5. **Display:** Enable or disable the information display and set the length of time for the information display to be visible after a source or resolution change.
6. **Reset OSD:** Selecting this will reset all OSD settings back to their factory defaults.

EDID	
2 ND LEVEL	3 RD LEVEL
HDMI EDID	FHD 2CH
	FHD MCH
	UHD 2CH
	UHD MCH
	UHD+ 2CH
	UHD+ MCH
	OUTPUT
	AUTO OUTPUT
EXIT	

1. **HDMI EDID:** Select the EDID to use with the HDMI input. Selecting “Output” will copy and use the current sink’s EDID but will not re-copy the EDID if the sink is changed. Selecting “Auto Output” will automatically copy and use the EDID from the current sink every time a new sink is connected.

RESET	
2 ND LEVEL	3 RD LEVEL
RESET ALL	
EXIT	

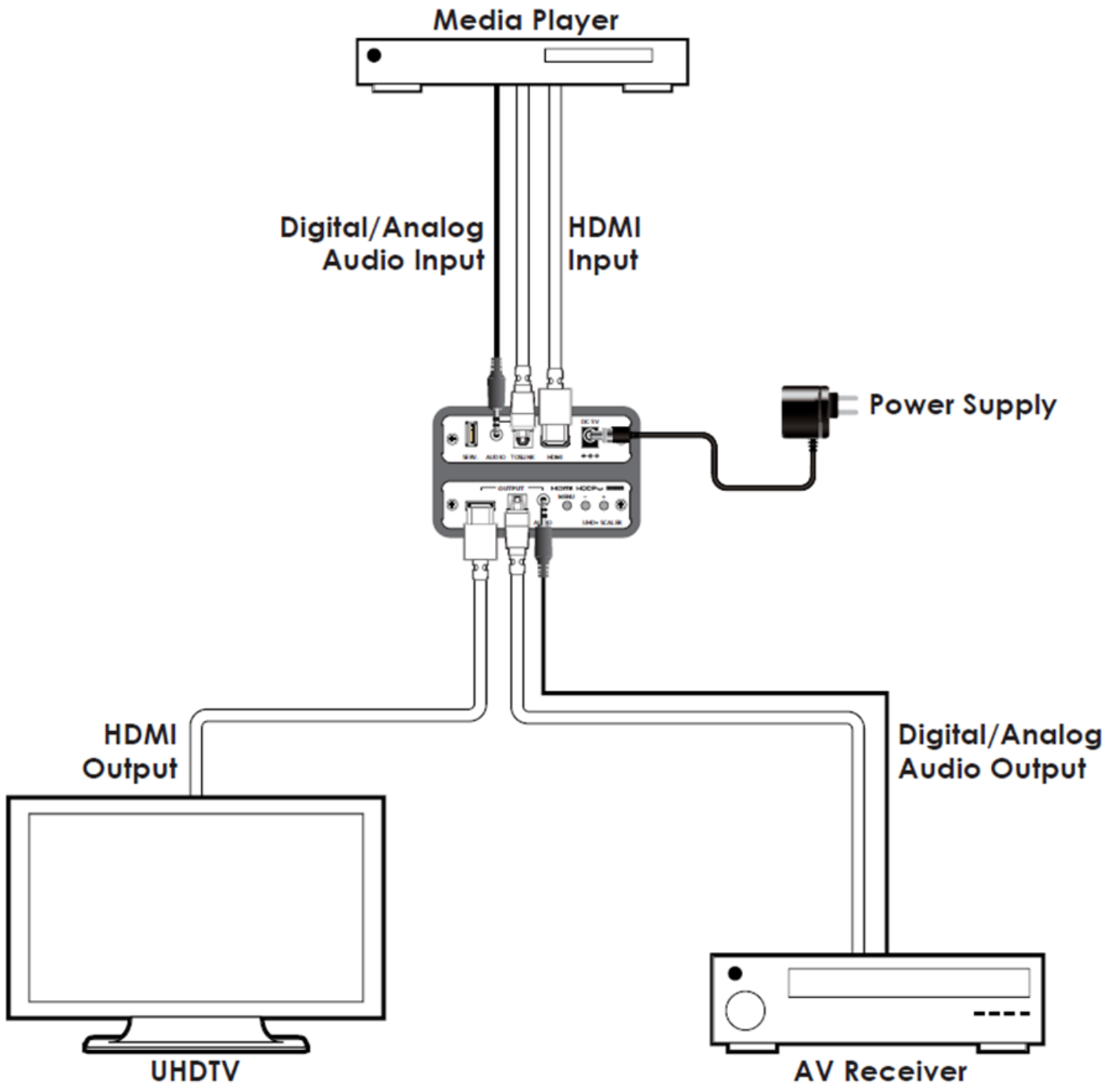
1. **Reset All:** Selecting this will reset the unit's settings back to their factory defaults.

FW UPDATE	
2 ND LEVEL	3 RD LEVEL
UPDATE FROM USB	
EXIT	

1. **Update from USB:** Provides a way to update the unit's firmware. Insert a USB thumb drive, with a valid firmware file (*.bin format) in the root directory, into the unit's USB service port then select this option. After the update is complete the unit will automatically reboot.

INFORMATION	
2 ND LEVEL	3 RD LEVEL
INPUT FORMAT	[CURRENT STATUS DETAILS]
INPUT COLOR	
INPUT RESOLUTION	
INPUT HDCP	
OUTPUT FORMAT	
OUTPUT COLOR	
OUTPUT RESOLUTION	
OUTPUT HDCP	
SINK HDCP	
VERSION	

1. **Information:** This screen displays information about the unit's current state, input and output status, as well as the current firmware version.



INPUT PORTS

Ports HDMI, L/R Audio, Optical Audio

OUTPUT PORTS

Ports HDMI, L/R Audio, Optical Audio

VIDEO SCALING

Max Resolution 4096 x 2160@60Hz; 4:4:4 8-bit

AUDIO

Audio Format L/R Analog
Connector 3.5mm Stereo Jack

OPTICAL AUDIO

Connector Toslink
Input Sampling Rate(s) (KHz) 32, 44.1, 48, 82, 88.2, 96, 176.4, 192
Output Sampling Rate (KHz) 48

STATUS LED INDICATORS

Power Indicates input power is present

PHYSICAL

Dimensions 4.01"(W) x 6.14"(D) x 0.98"(H)
Power Rating 5V DC, 2.6A
Operating Temperature 0 to 40°C, operating
Humidity 0 to 90% RH, Non-Condensing

CERTIFICATIONS

CE, FCC

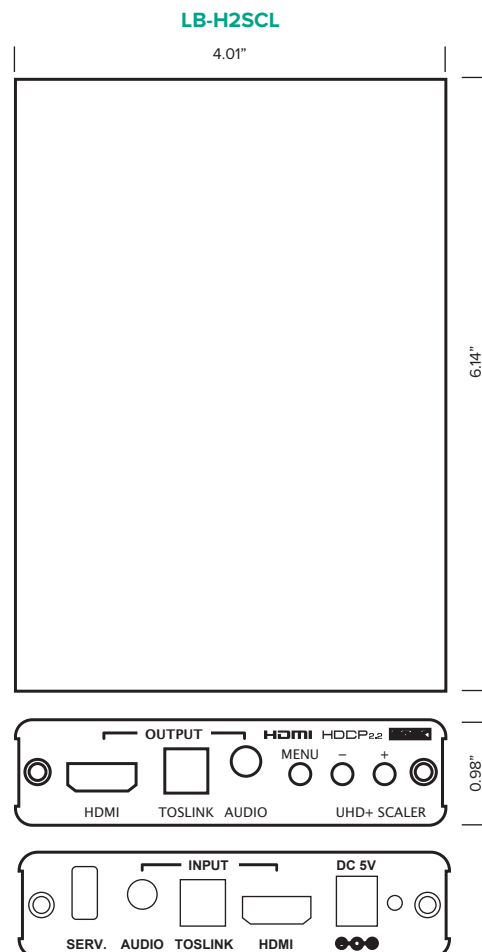
GREEN COMPLIANCE

RoHS

ORDER INFORMATION

LB-H2SCL Link Bridge 18G/4K HDMI Scaler with HDMI Input/Output

Included Accessories 5 VDC Power Adapter

PANEL DRAWING

3.1 Maintenance

There is no operator maintenance other than keeping the units clean. However, observe the following light indicators to make sure that the unit is working properly:

3.2 Troubleshooting

If the LB-H2SCL unit does not operate properly after installation, check for possible cable breaks, loose connections, and incorrect cable connections. If problems persist that may be fiber related, contact BCI at 1-800-214-0222 for further assistance.

For electrical problems, perform the following troubleshooting procedures:

1. If the POWER indicator is OFF, check for the following:
 - a. The line cord is plugged into the unit and your outlet has power.
2. If the POWER indicator is ON, but the Link indicator is OFF, check for the following:
 - a. Make sure the appropriate cables are being used.
 - b. Cable and cable connectors are not broken.
 - c. For each unit, the transmit (TX) cable is connected to the other unit's receiver (RX).
3. If the POWER indicator and Link indicator are ON, but the channels are not operating, then:
 - a. Check to see that the attached user equipment is turned on.
 - b. Both ends of the link are connected to the corresponding equipment and to the same corresponding channel port.
 - c. Cable connections at both channels are securely fastened to each connector. Turn the power off, then back on to reset the link.

5.1 Replacement Policy

Standard products found defective on arrival (DOA) will be replaced, based on availability, within 24 to 48 hours anywhere in the U.S. Please call Customer Service at 800-214-0222 for information.

5.2 Return/Repair Service

The LB-H2SCL contains no user serviceable components. If you have a problem with your unit, please contact the Customer Service Department. To facilitate our return/ repair processing please contact Broadata Communications, Inc. to obtain a Return Material Authorization (RMA). Please include the following information:

- Product Model Number
- Serial Number
- Complete Description of Problem
- Hardware Installation Description

Broadata Communications, Inc.
2545 West 237th Street, Suite K
Torrance, CA 90505
1-800-214-0222
(310) 530-1416
(310) 530-5958 (Facsimile)
e-mail: CustomerService@Broadatacom.com

Website: www.broadatacom.com

6.0 LIMITED WARRANTY

Broaddata Communications, Inc. (BCI) warrants, for a period of one year from date of shipment, each product sold shall be free from defects in material and workmanship. BCI will correct, either by repair, or at BCI's election, by replacement, any said products that in our sole discretion prove to be defective and are returned to the manufacturing location within 30 days after such defect is ascertained. All warranties are limited to defects arising under normal use and do not include malfunctions or failure resulting from misuse, abuse, neglect, alterations, electrical power problems, usage not in accordance with product instructions, improper installation, or damage determined by BCI to have been caused by the Buyer or repair made by a third party. Limited warranties granted on products are to the initial customer end-user and are not transferable. OUR LIABILITY UNDER THIS WARRANTY SHALL IN ANY CASE BE LIMITED TO THE INVOICE VALUE OF THE PRODUCT SOLD AND BCI SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OF ITS PRODUCTS OR THE SALE THEREOF. We make NO WARRANTY AS TO THE MERCHANTABILITY OF ANY GOODS, OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE OR END APPLICATION NOR DO WE MAKE ANY WARRANTY, EXPRESSED OR IMPLIED OTHER THAN AS STATED ABOVE.



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