

LBC-HDMI-R-SCL

LINK BRIDGE™ HDMI SCALER SYSTEM



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SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATIONS

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 systems is highly recommended in order to protect and extend the life of your equipment.

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1.0 PRODUCT DESCRIPTION

The LB-HDMI-R-SCL video scaler with LAN/IR/RS-232/Bidirectional PoH over a single CAT5e/6/7 receiver, can receive uncompressed audio/video over a single run of CAT5e/6/7 cable up to 100m with Bidirectional PoH (Power Over HDBaseT) feature. The system supports various methods of control that can be accomplished through on-panel buttons, IR remote, RS-232 and the On Screen Display (OSD). The device provides full range of output resolutions up to 1080p for HDTV timing and WUXGA for PC timing.

Features

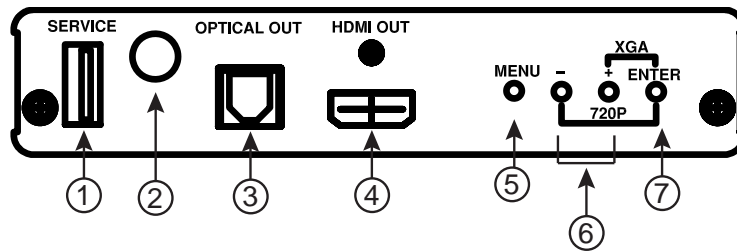
- Supports full range HDTV and PC output resolutions up to 1080p and WUXGA
- Receive HDMI signal and scale up to HD output
- Receive uncompressed data over a single 100m CAT5e/6/7 cable
- 5Play™ convergence: Video, Audio, LAN, Bidirectional PoH & Control (IR & RS-232 bypass)
- Supports IR, Remote control, RS-232 (bypass) and on-panel controls
- Supports OSD (On Screen Display) selection and display system information
- Includes a 24V DC power to or 24V received from compatible PoH Transmitter through CAT5e/6/7 cable
- Supports Ethernet transmission rate up to 100Mbps
- Supports HDMI, Optical (S/PDIF) audio sampling rate up to 48kHz

Package Contents

- HDMI/CAT5e/6/7 to HDMI with LAN/IR/RS-232/Bidirectional PoH Receiver
- IR Extender x 1
- IR Blaster x 1
- 24 V/2.7A DC power adapter
- IR Remote Control
- User Manual

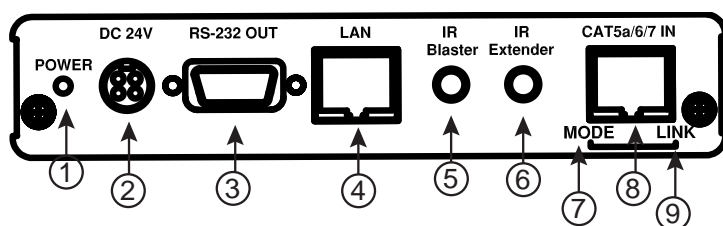
2.0 OPERATION CONTROLS AND FUNCTIONS

2.1 Front Panel



1. **SERVICE:**
This port is reserved for firmware update only.
2. **IR:**
IR Receiver window (accepts the remote control signal of this device only).
3. **OPTICAL OUT:**
Connect to an amplifier or active speaker with optical cable for audio output.
4. **HDMI OUT:**
This slot is to connect with HDMI TV/Monitor.
5. **MENU:**
Press this button to enter into the OSD menu.
6. **+/- :**
Press these buttons to scroll up and down through the OSD menu.
7. **Enter:**
Press this button to confirm the selection. Press this button together with [-] key to switch output timing to 720p@60 instantly. Press this button together with [+] key to switch output timing to XGA (1024x768) instantly.

2.2 Rear Panel

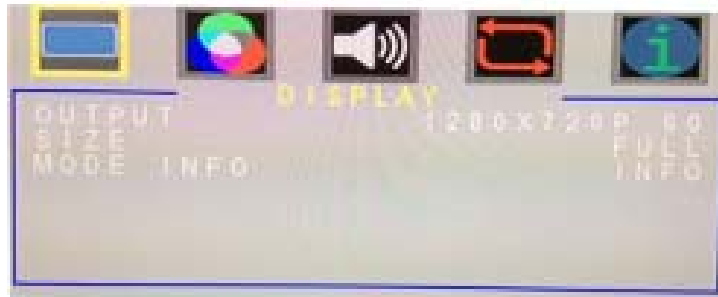


- 1. Power LED:**
This LED will illuminate when the device is connected to a power supply.
- 2. DC 24V:**
Plug the 24 V DC power supply into the unit and connect the adaptor to an AC outlet. Only one side of power is needed to activate both Transmitter and Receiver when both obtain the PoH function.
- 3. RS-232 OUT:**
This slot is to connect with D-Sub 9-pin cable from device equipment for receiving RS-232 commands. Commands are listed in Appendix B.
- 4. LAN:**
Connect to an active network for LAN sharing of a total transmission rate up to 100Mbps. Or when a compatible LAN equipped Transmitter is connected to an active network, this allows the network access (including internet access if available) to be shared between the Transmitter and Receiver. Connect any Ethernet equipped device e.g. a Smart TV or games console to the LAN port for that device to share the network internet access.
Note: DO NOT connect LAN cable with any of the CAT5e/6/7 port. Doing so may trigger power shut down and ruin the device
- 5. IR Blaster:**
Connect to the supplied IR Blaster cable for IR signal transmission. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.

6. **IR Extender:**
Connect to the supplied IR Receiver cables for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR Extender.
7. **MODE LED:**
This LED will be illuminated when the power is connected.
8. **Link LED:**
This LED will illuminate when the slot has been connected to the Transmitter and the Transmitter has connected with sources that show an image on screen.
9. **CAT5e/6 IN:**
Connect to the Transmitter unit with a Single CAT5e/6/7 cable for receiving all data signals.

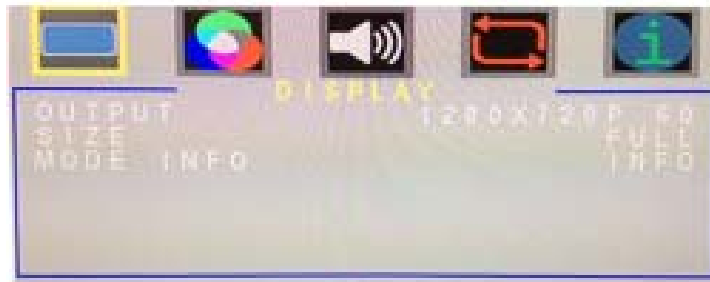
3.0 ON SCREEN DISPLAY (OSD) MENU

3.1 Main Menu Selection



Display, Color, Audio, Factory Reset, Information

3.2 DISPLAY: Output, Size, Mode Info



OUTPUT: 640x480 60, 800x600 60, 1024x768 60, 1360x768 60, 1280x720 60, 1280x800 60, 1280x1024 60, 1440x900 60, 1400x1050 60, 1680x1050 60, 1600x1200 60, 1920x1080 60, 1920x1200 60, 720x480P 60, **1280x720P 60** (Factory Default upon reset), 1920x1080I 60, **1920x1080P 60** (setting upon shipment), 720x576P 50, 1280x720P 50, 1920x1080I 50, 1920x1080P 50

SIZE: OVERSCAN, **FULL** (Factory Default upon reset), UNDERSCAN, LETTERBOX, PANSCAN, **ASPECT RATIO** (setting upon shipment), UNDER 2, UNDER 1

MODE INFO: INFO, ON, OFF

3.3 COLOR: Color, Contrast, Brightness, Hue, Saturation, Sharpness, NR



COLOR

RED: 0 ~ 1023 of Red Color Level

GREEN: 0 ~ 1023 of Green Color Level

BLUE: 0 ~ 1023 of Blue Color Level

RED OFFSET: 0 ~ 1023 of Red Color Level

GREEN OFFSET: 0 ~ 1023 of Green Color Level

BLUE OFFSET: 0 ~ 1023 of Blue Color Level

CONTRAST: 0 ~ 60 of Contrast Level

BRIGHTNESS: 0 ~ 60 of Brightness Level

HUE: 0 ~ 60 of Hue Level

SATURATION: 0 ~ 60 of Saturation Level

SHARPNESS: 0 ~ 30 of Sharpness Level

NR: **OFF** (*Factory Default upon reset*), LOW, MIDDLE, HIGH

3.4 AUDIO



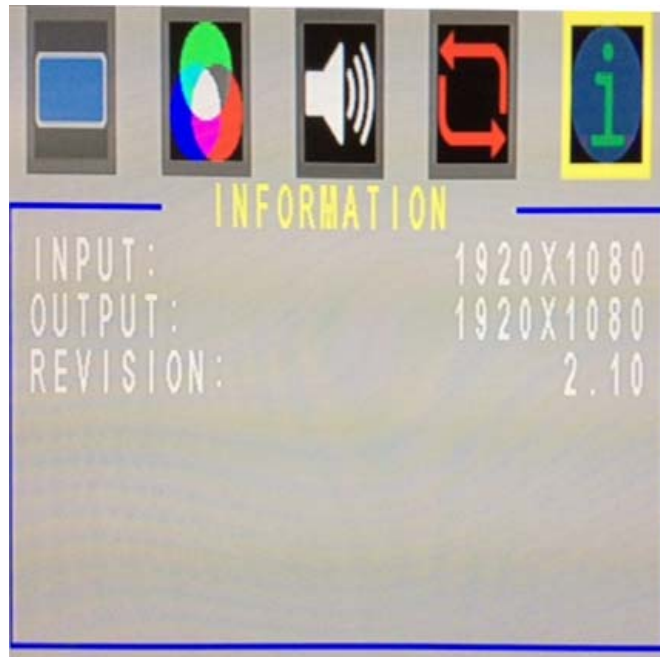
VOLUME: 0 ~ 100
DELAY: OFF, 40ms, 110ms, 150ms
SOUND: ON, MUTE

3.5 SETUP: Factory Reset, Keylock



FACTORY RESET: YES, NO
KEY LOCK: OFF, ON

3.6 INFORMATION: Input, Output, Revision



INPUT: Input Resolution Displayed
OUTPUT: Output Resolution Displayed
REVISION: Firmware Revision Displayed

4.0 CONNECTOR PIN ASSIGNMENT

4.1 IR Pin Assignment

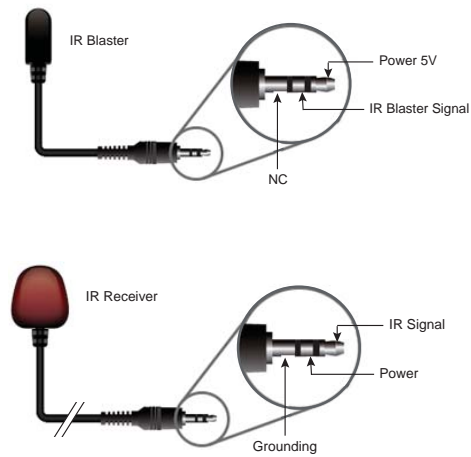


Figure 4-1
IR Blaster and IR Extender Pin Assignment

4.2 RS-232 Pin Assignment

PIN	DEFINE TX / RX
1	N/C
2	TxD/RxD
3	RxD/TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 9600bps

Data Bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

Table 1
RS-232 Pin Assignment

Note: The RS-232 command set is shown in the Table of Appendix B.

5.0 MAINTENANCE AND TROUBLESHOOTING

5.1 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:

5.2 Troubleshooting

If the LBC-HDMI-R-SCL units do 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.

6.0 SPECIFICATIONS

Ethernet Speed	100 Mbps
Output Video Bandwidth	165MHz/ 1.65 Gbps
Input Video Bandwidth	300MHz / 10.2Gbps
Input Port	1×CAT5e/6/7, 1×IR Extender
Output Port	1×HDMI, 1×IR Blaster, 1×Optical, 1×RS-232, 1×LAN
CAT5e/6/7 Output Cable	Up to 100 Meters
Supports Input Resolution	HD: Up to 1080p@60 Hz PC: Up to WUXGA (RB)
Supports Output Resolution	Up to WUXGA & 1080p (Refer to Appendix A for supported resolutions)
Audio Sampling Rate	Up to 48 kHz or LCPM 2CH
CAT5e/6/7 Resolutions Support	HD: Up to 1080p@60 Hz PC: Up to WUXGA (RB)
IR Frequency	30~50 kHz
Dimensions	145 mm (W)×192 mm (D)×30 mm (H)
Chassis material	Metal
Box Color	Black
Operating Temperature	0 °C~40 °C / 32 °F~104 °F
Relative Humidity	20 ~ 90 % RH (non-condensing)
Power Supply	110~240v AC 50/60 Hz, 24v @ 2.7 A DC
Power Consumption	14W

7.0 SERVICE PROCEDURE

7.1 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.

7.2 Return/Repair Service

The LBC-HDMI-R-SCL System 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

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(310) 530-1416
(310) 530-5958 (Facsimile)
e-mail: CustomerService@Broadatacom.com
Website: www.broadatacom.com

8.0 LIMITED WARRANTY

Broadata 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.

9.0 APPENDIX A: SUPPORTED INPUT RESOLUTIONS

INPUT RESOLUTION	HDMI
480i/576i	✓
480p/576p	✓
720p@50/60 Hz	✓
1080i@50/60 Hz	✓
1080p@50/60 Hz	✓
VGA@60/72/75 Hz	✓
SVGA@56/60/72/75 Hz	✓
XGA@60/70/75 Hz	✓
SXGA@60/75 Hz	✓
UXGA@60 Hz	✓
1280×800@60 Hz	✓
1680×1050@60 Hz (RB)	✓
1920×1080@60 Hz	✓

10.0 APPENDIX B: RS-232 COMMANDS

COMMAND	DESCRIPTION
S OUTPUT 0~25	0=Native 1=640×480 2=800×600 3=1024×768 5=1360×768 6=1280×720 7=1280×800 8=1280×1024 9=1440×900 10=1400×1050 11=1680×1050 12=1600×1200 13=1920×1080 16=1920×1200 17=480p 18=720p@60 19=1080p@60 20=1080i@60 22=576p 23=720p@50 24=1080p@50 25=1080i@50
R OUTPUT	Reports the numerical equivalent for the OUTPUT setting (as listed above)
S SIZE 0~6	0=OVERSCAN 1=FULL 2=BEST FIT 3=PAN SCAN 4=LETTER BOX 5=UNDER 2 6=UNDER 1
R SIZE	Reports the numerical equivalent for the SIZE setting (as listed above)
S CONTRAST 0~60	Sets the numerical value for the CONTRAST setting (0-60)
R CONTRAST	Reports the numerical value for the CONTRAST setting (0-60)
S BRIGHTNESS 0~60	Sets the numerical value for the BRIGHTNESS setting (0~60)
R BRIGHTNESS	Reports the numerical value for the BRIGHTNESS setting (0~60)
S HUE 0~60	Sets the numerical value for the setting (0~60)
R HUE	Reports the numerical value for the setting (0~60)

COMMAND	DESCRIPTION
S SATURATION 0~60	Sets the numerical value for the SATURATION setting (0~60)
R SATURATION	Reports the numerical value for the SATURATION setting (0~60)
S SHARPNESS 0~30	Sets the numerical value for the SHARPNESS setting (0~30)
R SHARPNESS	Reports the numerical value for the SHARPNESS setting (0~30)
S NR 0~3	0=OFF 1=LOW 2=MIDDLE 3=HIGH
R NR	Reports the numerical equivalent for the NOISE REDUCTION setting (as listed above)
S AUDIO DELAY 0~3	0=OFF 1=40ms 2=110ms 3=150ms
R AUDIO DELAY	Reports the numeric equivalent for AUDIO DELAY setting (as listed above)
S AUDIO MUTE 0/1	0=ON 1=MUTE
R AUDIO MUTE	Reports the numeric equivalent for AUDIO MUTE setting (as listed above)
S KEY LOCK 0/1	0=ENABLE 1=DISABLE
R KEY LOCK	Reports the numeric equivalent for KEY LOCK setting (as listed above)
FW	Checks the FIRMWARE version
S RESET 1	Sets the numerical equivalent for the RESET setting (as left)

Note:

1. RS-232 commands will not execute unless followed with carriage return and LF (Line Feed).
2. Commands are not case-sensitive
3. Resolutions 1~16 are RGB encoded and 17~25 are YUV encoded.
4. Digital audio supports LPCM 2CH only, please ensure the source input audio is set to send LPCM 2CH audio in order to avoid unwanted audio noise.

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