

Gefen

®

HDMI® 1.3 to 3GSDI Scaler

EXT-HDMI1.3-2-3GSDIS
User Manual



www.gefen.com

ASKING FOR ASSISTANCE

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INTRODUCTION

Congratulations on your purchase of the HDMI 1.3 to 3GSDI Scaler. Your complete satisfaction is very important to us.

Gefen

Gefen delivers innovative, progressive computer and electronics add-on solutions that harness integration, extension, distribution and conversion technologies. Gefen's reliable, plug-and-play products supplement cross-platform computer systems, professional audio/video environments and HDTV systems of all sizes with hard-working solutions that are easy to implement and simple to operate.

The Gefen HDMI 1.3 to 3GSDI Scaler

The Gefen HDMI 1.3 to 3GSDI Scaler outputs an HDMI signal as SDI/HD-SDI or 3G-SDI with resolutions supported up to 1080p/60 Hz and 2K (2048x1080/60) on two SDI output connectors along with dual link HD-SDI. HDMI-embedded audio is supported at up to 7.1 channels.

An advanced chipset enables features such as: Genlock, Color & Gamma Correction, Noise Reduction, Detail Enhancement, Aspect Ratio Selection, Pattern Generator Mode, and Multiple Languages through on-screen display (OSD) Menu Support. The genlock reference input provides the capability of syncing the unit with the customer's house signal.

How It Works

Connect an HDMI source to the input and a 3G-SDI display to the output. Power up the device and video signals are automatically converted to the proper format, enabling the conversion and scaling to take place.

OPERATION NOTES

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE HDMI 1.3 TO 3GSDI SCALER

- Upon power up, the HDMI 1.3 to 3GSDI Scaler will automatically detect the input format of the input. The unit is controlled using the included remote.
- The following are the buttons for the RMT-8HDS-IR:
 - UP (Navigates cursor up)
 - LEFT (Navigates cursor left)
 - ENTER (Accept Operation / Return to Menu)
 - RIGHT (Navigates cursor right)
 - DOWN (Navigates cursor down)
 - MENU (Show / Hide Onscreen Display)
 - OUTPUT (Change Output Format)
 - SOURCE (Non operational)
- To bring up the on-screen menu, press the MENU button. Navigation is done using Buttons up, left, right, and down; Push the ENTER button to accept the cursor focus.
- Pressing the Output button cycles through the following output modes: 480i - 576i - 720p - 1080i
- Other functions and output modes can be accessed through the onscreen menu. To Restore I/O settings, simply recycle power on the Scaler

*Note: Both DIP switches under the remote battery cover must initially be in the OFF position to communicate with the Scaler.

FEATURES

HDMI 1.3 Features Supported:

- 225 MHz Video Bandwidth
- 10-bit Deep Color
- xvYCC
- Up to 8 channels of PCM audio embedded into HDMI
- Dolby Digital/DTS AC3 encoded audio

Features

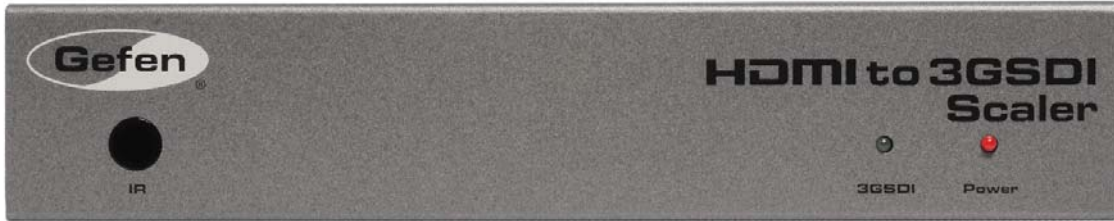
- 10-bit resolution for greater precision and dynamic range
- Proprietary motion adaptive video de-interlacing with edge interpolation for SD/HD formats
- Supports 8 channels of SDI audio
- Advanced noise reduction and detail enhancement
- Fully integrated sprite-based multi-plane OSD controller
- Frame rate conversion to / from any refresh rate
- Pattern mode w/ color bars & coarse hatch patterns
- Color correction
- Input color range can be controlled
- Noise Reduction
- Detail Enhancement
- Brightness Adjustment
- Gamma Selection
- Aspect Ratio Select
- French/English Menu Set
- USB-upgradeable firmware
- Remote control via IR remote control and/or RS232 serial port
- 3GSDI level A/B (4:2:2 color space only)

Package Includes

- (1) HDMI 1.3 to 3GSDI Scaler
- (1) 6 ft. HDMI cable (M-M)
- (1) 6 ft. DB9 Serial Cable (M-F)
- (1) IR Remote Control Unit
- (1) 5V DC Locking Power Supply
- (1) Set Rack Ears
- (1) User Manual

PANEL LAYOUT

Front Panel



1

2

3

Back Panel



4

5

6

7

8

9

10

PANEL DESCRIPTIONS

1 *Infrared Eye*

This receiver will receive commands from the included remote control. For proper operation, line of sight must be maintained between this receiver and the I/R remote control..

2 *3G-SDI Indicator LED*

This indicator will become active when the output video stream is a 3G-SDI signal.

3 *Power Indicator LED*

This indicator will become active when power is being supplied to the unit via the included 5V DC power adapter.

4 *RS-232 Control Port*

This interface was designed to accept commands from an external control system. This port will allow switching commands as configuration operations

5 *5V Locking Power Receptacle*

This input will accept power via the included locking 5V DC power supply. Connect the power supply between this input and an open wall power socket.

6 *USB Input Port*

This port is used to update firmware. For current firmware releases, please see the download section at www.gefen.com.

7 *Genlock Ref Signal Input*

Connect Genlock reference signal here. This is designed to connect an external clock (e.g. house clock) to the unit

8 *Coax Digital Audio Output*

Connect coaxial digital audio output to this port.

9 *HDMI Input*

This input will accept a single HDMI type A male cable. For acceptable input formats see page 11.

10 *3G-SDI Output*

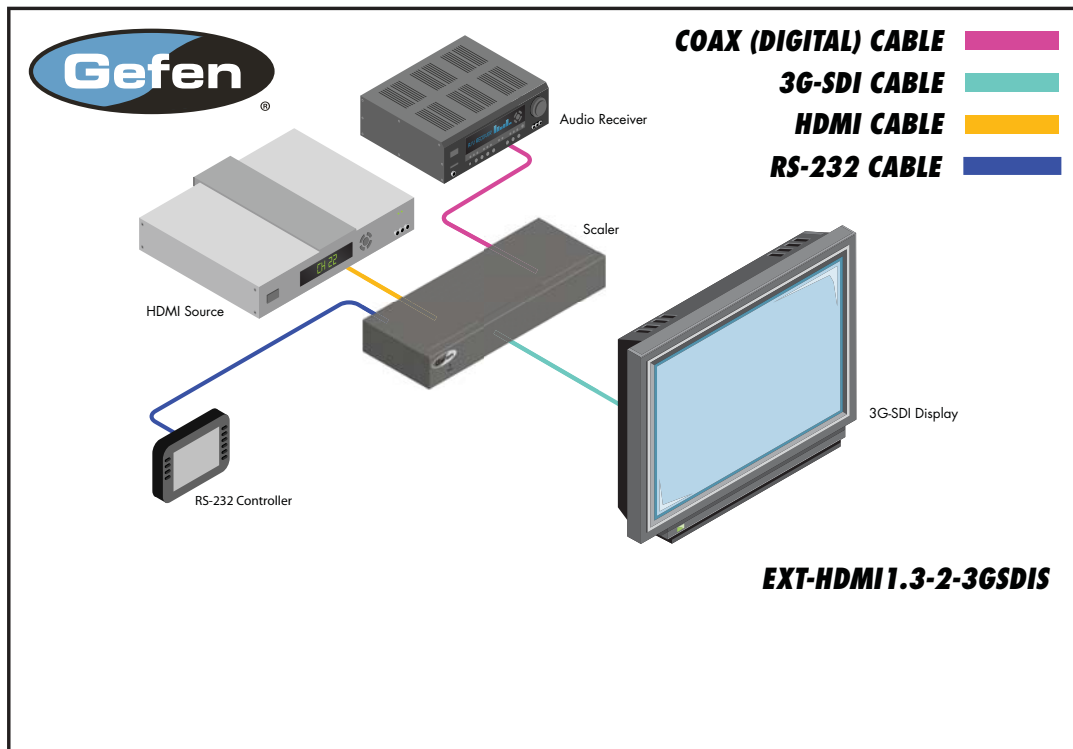
These outputs send converted SD/HD/3G-SDI audio/video to a single SD/HD/3G-SDI device using a user supplied SDI cable. Converted HDMI signals will be output through these SDI ports. For a full description of the supported A/V formats on this output please page 12.

CONNECTING AND OPERATING THE HDMI 1.3 TO 3GSDI SCALER

How to Connect the 3GSDI to HDMI 1.3 Scaler

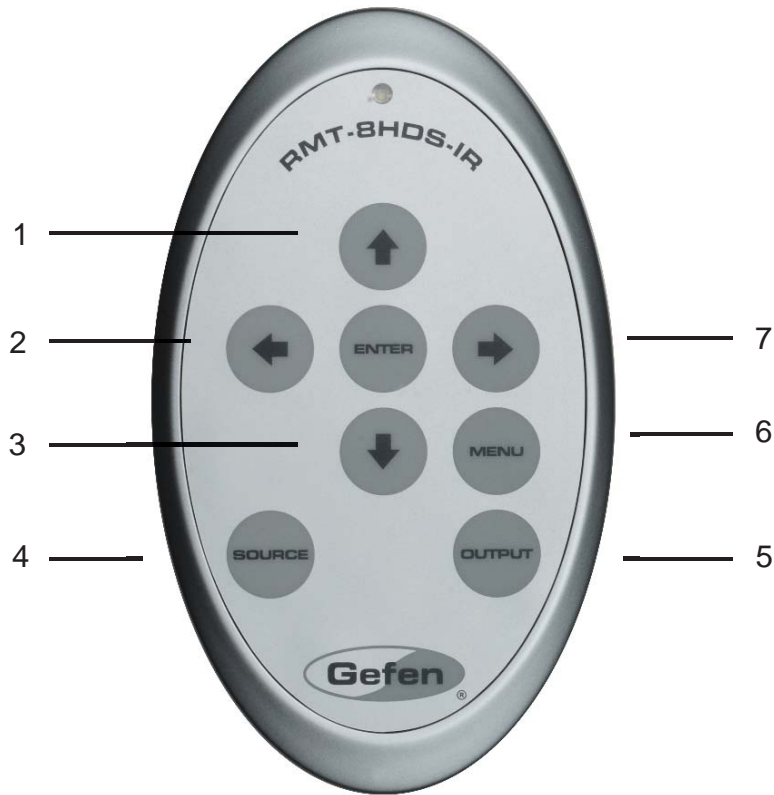
1. Connect the HDMI source device to the HDMI 1.3 to 3GSDI Scaler using the supplied HDMI cable.
2. Connect the 3GSDI device to the HDMI 1.3 to 3GSDI Scaler using an SDI cable.
3. Connect the included 5V DC locking power supply to the HDMI 1.3 to 3GSDI Scaler and plug the AC power cord into an available electrical outlet.
4. The HDMI 1.3 to 3GSDI Scaler will automatically detect the format of the input signal.

Wiring Diagram for the Gefen HDMI 1.3 to 3GSDI Scaler



IR REMOTE CONTROL UNIT DESCRIPTION

RMT-8HDS-IR



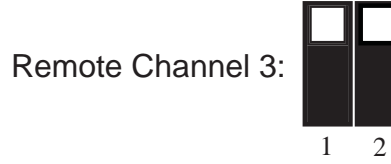
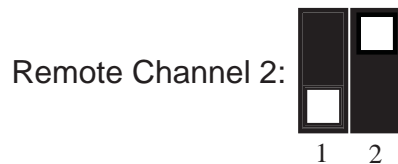
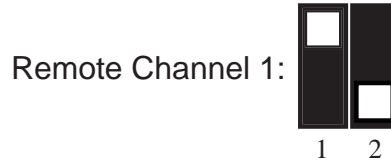
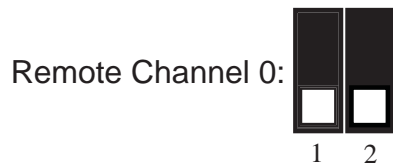
- 1 Up**
Navigates cursor UP in the Menu System.
- 2 Left**
Navigates cursor LEFT in the Menu System.
- 3 Down**
Navigates cursor DOWN in the Menu System.
- 4 Source**
Not used.
- 5 Output**
Cycles through the following output modes: 480i - 576i - 720p - 1080i
- 6 Menu**
Show / Hide the Menu System.
- 7 Right**
Navigates cursor RIGHT in the Menu System

IR REMOTE CONTROL UNIT INSTALLATION

1. Remove battery cover from the back of the RMT-8HDS-IR remote.
2. Verify that DIP switches 1 and 2 are in the down (OFF) position.
3. Insert the battery, hold the battery so that you can see the positive side facing up. The side that is not marked must be facing down.
4. Test the RMT-8HDS-IR remote by pressing ONLY one button at a time. The indicator light on the remote will flash once each time you press a button. **WARNING:** Do not press multiple buttons simultaneously and do NOT press buttons rapidly. These actions will cause the remote to reset and steps 1-4 will have to be repeated.

Note: The RMT-8HDS-IR ships with two batteries. One battery is required for operation, the second battery is complimentary.

The following are the DIP switch combinations that correspond to the Remote Code menu option on the HDMI 1.3 to 3GSDI Scaler (see Menu Functions section for more information).



MENU FUNCTIONS

Aspect:

- Full Screen: Stretches input to fill the Monitor
- Letter / Pillar Box: Sets the aspect ratio to fit a letter or pillar box format
- Panoramic: Panoramic Zoom feature
- Extract: Feature to magnify the signal
 - Exact Size: Adjusts signal magnification.
 - Horizontal / Vertical Position: Moves magnified signal Up/Down
- Through: Feature to crop the signal
 - H/V Size: Horizontally and Vertically contracts or expands the cropping viewport.
 - H/V Position: Moves the signal Left/Right or Up/Down inside the cropping viewport.

Layout:

- Size and Position:
 - H/V Size: Adjusts Horizontal or Vertical resolution.
 - H/V Position: Moves image Horizontally or Vertically.

Picture:

- Image Color:
 - Contrast: Individually adjusts the contrast for red, green and blue
 - Brightness: Individually adjusts the brightness for red, green and blue
 - Black Level: Adjusts black levels between 0 (default) and 100.
- Gamma Correction:
 - Default: Sets Default Gamma settings.
 - sRGB
 - Custom: Enables Gamma Coefficient menu item as the current Gamma coefficient
 - Gamma Coefficient (0 .3- 3.0); default set to a value of 1.0.
 - User Table
- Detail Enhancement:
 - Digital Detail Enhancement enhances the signal
 - Noise Threshold: Adjusts the amount of noise allowed in detail enhancement
- Noise Reduction: Digitally reduces signal noise
- Motion Threshold

Input:

- Input Video Format & Input Graphic Format:
 - Auto Detect by default. Signal can be forced to a specific High-definition resolution. (Please see Supported Input / Output Resolutions for more info.)
- Clean Aperture:
 - Horizontal and Vertical Size: Stretch image Left/Right or Up/Down
 - Horiz. and Vertical Position : Move image in viewport Left/Right or Up/Down

MENU FUNCTIONS

- Remote Channel:
Changes the IR code of the HDMI to 3GSDI Scaler to one of 4 different settings between 0 and 3. When the remote channel is changed, DIP switches in the 8-button remote must be changed to the corresponding codes in order to continue operating the Scaler. (Please see the Installation page for the RMT-8HDS-IR remote control for more information).
- Non-Standard Sync: Allows the unit to sync with non-standard video formats.
- Film Mode (Enable, Disable)

Output:

- Video Output Format: Select the desired HD output resolution. See pages 11 - 12 for more information.
- Audio Output Format: The built-in S/PDIF coaxial connector outputs the first 2 channels of Audio Group 1 PCM bitstream (8 channels) and compressed audio formats using the first 2 ch. of Audio Group 1.
- Link Configuration: When using dual link SDI/HDSDI input, allows you to select either YCbPr or RGB. When using 3GSDI, selects A or B (4:2:2 only).
- Genlock:
 - Off: Free run mode.
 - Video Input: Locks the input clock in sync with the output clock.
 - Reference Input: Locks the output clock with the Reference clock.

Patterns:

- Color Bars: Displays color bar video pattern.
- Cross Hatch: Displays cross-hatch video pattern.

General:

- Language: Sets the menu to display English or French text.
- Save Config
- Restore Default Config
- Remote Channel
- FPGA Version
- Firmware Version
- Configuration Version

Note on Genlock Operations: When the refresh rate of the source device connected to the genlock input and the refresh rate of the 3G-SDI output device are equal or a multiple of the output device's refresh rate, the Scaler will automatically genlock them. (For example, an output refresh rate of 60Hz will be genlocked with input refresh rates of 30Hz, 60Hz and 50Hz but not with 59.94Hz.) Genlock synchronization is performed each time the input and output devices are changed. Recognized Reference input formats are: 1080i/50/59/60, 720p50/59/60, 480i(NTSC), and 576i(PAL).

SUPPORTED INPUT RESOLUTIONS

Note: Since the scaler processor (VXP) is 10-bit, all 12-bit input formats will be truncated to 10 bits. (8-bit input will be dithered to 10-bit)

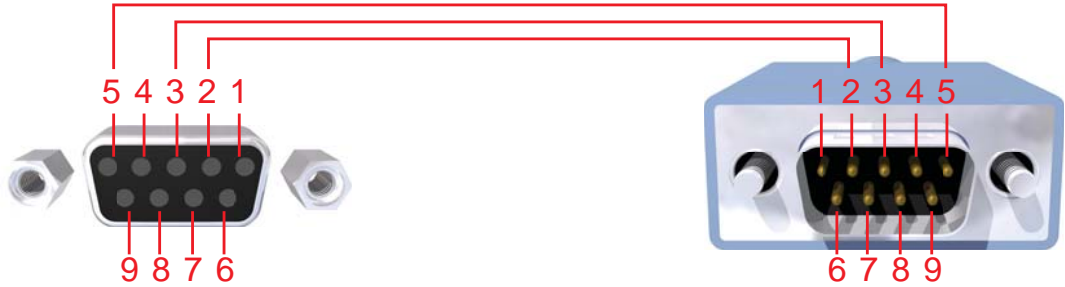
Rate	Type	Resolution / Frame Rate	Color Space	Bit Depth	Supported
SD	Video	480i & 480p(59.94) 576i & 576p(50)	YCbCr 4:2:2 YCbCr 4:4:4 RGB 4:4:4	8/10	Yes
HD	Video	720p(23.97/24/25/29.97/30/50/59.94/60) 1080i(50/50M/59.94/60) 1035i(59.94/60) 1080p(23.98/24/25/29.97/30) 1080p(50/50M/59.94/60) 2K(23.97/24)	YCbCr 4:2:2	8/10/12	Yes
			YCbCr 4:4:4 RGB 4:4:4	8	Yes
			YCbCr 4:4:4 RGB 4:4:4	10/12 (Deep Color)	Yes
n/a	Graphics	640x350(85) 640x400(85) 640x480(60) 640x480(75) 640x480(85) 800x600(60) 800x600(75) 1024x768(60) 1024x768(75) 1024x768(85) 1280x854 1152x864(75) 1280x768(60) 1280x960(60) 1280x960(85) 1280x1024(60) 1280x1024(75) 1280x1024(85) 1360x768(60) 1366x768(60) 1366x923(50) 1440x900(60) 1440x1080(60) 1600x1024 1600x1200(60) 1680x1050(60) 1920x1200(60) 2048x1080	YCbCr 4:2:2	8/10/12	Yes
			YCbCr 4:4:4 RGB 4:4:4	8	Yes
			YCbCr 4:4:4 RGB 4:4:4	10/12 (Deep Color)	Yes

SUPPORTED OUTPUT RESOLUTIONS

SDI Output Formats Supported are shown in the following table:

Rate	Type	Resolution / Frame Rate	Color Space	Bit Depth	Support
SD	Video	480i & 480p (59.94) 576i & 576p (50)	YCbCr 4:2:2	8/10	Yes
Dual Link Interlaced SD	Video	480p 576p	YCbCr 4:2:2	8/10	Yes
HD	Video	720p(23.97/24/25/29.97/30/50 /59.94/60) 1080i(50/50M/59.94/60) 1035i (59.94/60) 1080p (23.98/24/25/29.97/30) 1080sf(23.98/24/25/29.97/30) 2K p(23.97/24) 2K sf(23.97/24)	YCbCr 4:2:2	8/10	Yes
HD Dual Link HD 4:4:4	Video	720p(23.97/24/25/29.97/30/50 /59.94/60) 1080i(50/50M/59.94/60) 1035i (59.94/60) 1080p (23.98/24/25/29.97/30) 1080sf(23.98/24/25/29.97/30) 2K p(23.97/24) 2K sf(23.97/24)	YCbCr 4:4:4 RGB 4:4:4	8/10	Yes
Dual Link 1080p	Video	1080p (50/50M/59.94/60)	YCbCr 4:2:2	8/10	Yes
3G Level A	Video	1080p (50/50M/59.94/60)	YCbCr 4:2:2	8/10	Yes
3G Level B	Video	1080p (50/50M/59.94/60)	YCbCr 4:2:2	8/10	Yes

RS-232 SERIAL CONTROL INTERFACE



Only Pins 2 (RX), 3 (TX), and 5 (Ground) are used on the RS-232 serial interface

RS232 Settings

- Bits per second 19200
- Data bits 8
- Parity None
- Stop bits1
- Flow Control None

FIRMWARE UPDATE PROCEDURE

The HDMI1.3 to 3GSDI Scaler can be controlled via IR remote, the RS-232 serial port, and the USB port. For USB control, drivers must be installed first. The USB port is seen as a virtual COM port inside Windows™. Firmware updates may be performed through the USB port only (not the RS-232 port). Please visit the download section on our website for firmware updates and information on how to control this unit using RS-232 protocols. This web address (URL) has links to the necessary documents and files:

<http://www.gefen.com/kvm/support/download.jsp>

SPECIFICATIONS

Input Video Bandwidth.....	225 MHz
Output Video Bandwidth.....	2 x 3.0 Gbps
Maximum Input Resolution.....	2048x1080
Maximum Output Resolution.....	2048x1080
HDMI Connector.....	type A 19 pin female
SDI/HDSDI Connector.....	BNC female
Data Port.....	Serial RS-232 / USB
Power Supply.....	5V DC
Power Consumption.....	20 watts (Max.)
Dimensions.....	8.25"W x 1.75"H x 7.5"H
Shipping Weight.....	5 lbs.

WARRANTY

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.
2. Customers outside the US are responsible for shipping charges to and from Gefen.
3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

The information in this manual has been carefully checked and is believed to be accurate. However, Gefen assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Gefen be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the features and specifications is subject to change without notice.

For the latest warranty coverage information, please visit Gefen's Warranty web page at <http://www.gefen.com/kvm/aboutus/warranty.jsp>

PRODUCT REGISTRATION

Please register your product online by visiting Gefen's web site at <http://www.gefen.com/kvm/Registry/Registration.jsp>

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This product uses UL listed power supplies.