Gefen

®

HDMI 1.3 to 3GSDI Converter

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

Gefen ®

HDMI to 3GSDI
Converter

VL   3G   Power

www.gefen.com

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Notice
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CONTENTS

Congratulations on your purchase of the HDMI 1.3 to 3GSDI Converter. 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 Converter

The Gefen HDMI 1.3 to 3GSDI Converter takes a single HDMI input signal and converts it to SDI standard definition, HD-SDI (single link only) high-definition, or 3G-SDI high-definition with ultra high bandwidth. Converted HDMI audio/video signals are output in SDI/HD-SDI/3G-SDI format on two SDI BNC connectors with up to 8 channels of converted HDMI audio present in the output signal.

A single pair of RCA-type L/R analog audio output jacks enables monitoring of the first two (2) audio channels embedded in the HDMI audio source signal.

LED indicators on the front and bottom of the unit provide HDMI and SDI signal status for troubleshooting assistance in the event of errors.

How It Works

An HDMI source is connected to the HDMI input on the HDMI 1.3 to 3GSDI Converter. An SDI device is connected to the SDI outputs on the Converter. The included power supply is connected to the HDMI 1.3 to 3GSDI Converter. When the HDMI source and the HDMI 1.3 to 3GSDI Converter are connected and powered on, audio/video signals are converted to the proper format on connected A/V output devices (displays, audio receivers).

A bank of dedicated DIP switches on the underside of the unit allows control over features of the Converter, including Sampling, Color Space/Color Depth and EDID Management settings.

PC video input formats are not supported. This device does not scale video. Only SMPTE formats are supported on the SDI outputs.

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

- The Converter is compliant to SD/HD SDI SMPTE 292M, SMPTE 274M, SMPTE 259M, SMPTE 296M, ITU-R BT.656 and ITU-R BT.601

- The Converter handles 3G-SDI SMPTE 425-A and 425-B / formats 1080P 50/59.94/60

- The HDMI 1.3 to 3GSDI Converter supports the following resolutions:

Video Resolution	Refresh Rate (Hz)	Rate
525i (NTSC) (480i)	59.94	SD
625i (PAL) (576i)	50	SD
720p	50	HD
	59.94	HD
	60	HD
1080i	50	HD
	59.94	HD
	60	HD
1080p	23.98	HD
	24	HD
	25	HD
	29.97	HD
	30	HD
	50	3G lev.A/B
	59.94	3G lev.A/B
	60	3G lev.A/B
2K	23.97	HD
	24	HD
	25	HD

- HDMI source audio is converted to SDI audio only when the audio sampling rate is 48 KHz; other rates will produce unrecognizable audio.

- The input signal is always converted and output to 4:2:2 (YCbCr) 10-bit.

- When using SDI and HD-SDI equipment, outputs A and B are mirrored.

- The first 2 channels of HDMI audio embedded within the source signal are output on the L/R analog audio RCA connectors for monitoring purposes.

Features

- The Converter is plug-and-play. Additional configuration is available via built-in bank of DIP switches underneath the unit

- Firmware is upgradable in the field using the integrated USB port

- Integrated 720p 60Hz test pattern is available for use without the need of a video/audio input signal

- Supports up to 8 channels of PCM audio output on the 3GSDI connector

- Supports Dolby Digital/DTS AC3 encoded audio

- 2 Analog audio outputs are provided to monitor incoming HDMI audio (obtained from the converted first two channels of the HDMI source signal)

- Input resolutions up to 2K (2048x1080) are supported; Output resolutions of up to 1080p@60 Hz are supported.

- Dual outputs are available when using SDI and HD-SDI equipment

- Settings are done via the built-in bank of DIP switches underneath the unit

- Handles 3G-SDI SMPTE 425-A and 425-B (auto converts B to A)

- The Converter uses a locking power input for secure connections

Package Includes

(1) HDMI 1.3 to 3GSDI Converter
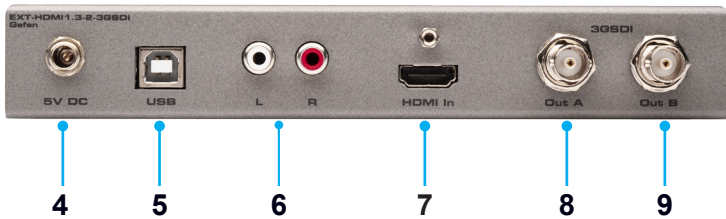(1) 6 ft. HDMI cable (M-M)
(1) 5V DC Power Supply
(1) Quick Start Guide

Front Panel

Back Panel

1   ***Video Lock LED Indicator***
This indicator will become active once the HDMI input signal has been locked.

2   ***3G LED Indicator***
This indicator will become active when the output video stream is 3G signal.

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

4   ***Locking 5V DC 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.

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

6   ***Analog RCA L+R Audio Ouput***
This input will output the first two (2) channels of analog audio extracted from the digital HDMI input source on RCA style L+R analog audio connectors. The primary purpose of these outputs is for monitoring purposes.

7   ***HDMI Input***
This input will accept a single HDMI type A male cable. See page 2 for a list of acceptable input formats.

8   ***SDI Output Channel A***
This output sends 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 this SDI port. See page 2 for a full description of the supported A/V formats on this output.

9   ***SDI Output Channel B***
This output sends 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 this SDI port. See page 2 for a full description of the supported A/V formats on this output.
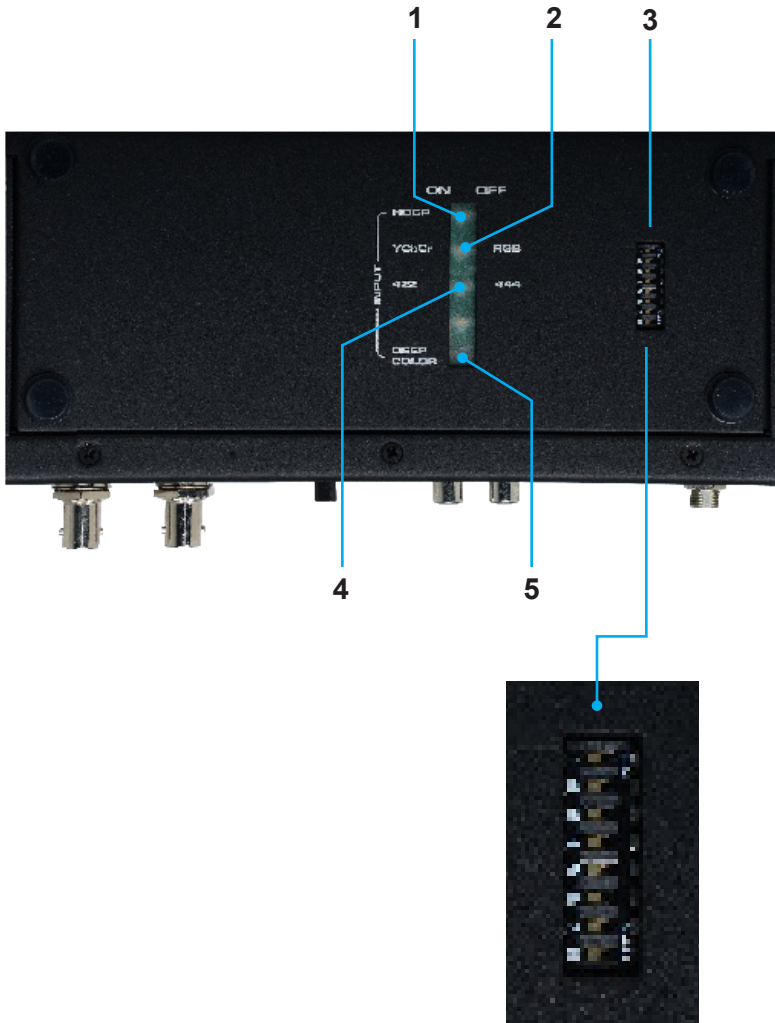
The converted HDMI signal will be output by default through this port (mirror output of Channel A) unless the 3G-SDI Level B mode is selected and the input video is 1080p 50/59/60Hz.

Bottom Panel

1   ***HDCP LED Indicator***
This LED indicator will relay the status of the incoming HDMI's HDCP status. Options are either HDCP encrypted (LED ON) or No HDCP present (LED OFF).

NOTE: In accordance with HDCP regulations, HDCP encrypted HDMI sources will not be converted to SDI output formats.

2   ***HDMI Input Color Space LED Indicator***
This LED indicator will relay the status of the incoming HDMI input's color space. Options are either YCbCr (LED ON) or RGB (LED OFF).

NOTE: When the input color space is RGB, a conversion takes place to output SDI in YCbCr format.

3   ***Configuration DIP Switches***
This bank of DIP switches will enable or disable specific features on the HDMI 1.3 to 3GSDI Converter. For a complete listing of DIP switch features and their functions, see page 9.

4   ***HDMI Input Color Subsampling LED Indicator***
This LED indicator will relay the status of the incoming HDMI input's color subsampling. Options are either 4:2:2 (LED ON) or 4:4:4 (LED OFF).

NOTE: When the input sampling is 4:4:4, a conversion takes place to output SDI in 4:2:2 format.

5   ***HDMI Deep Color LED Indicator***
This LED indicator will indicate the presence of Deep Color (at least 10bit) in the incoming HDMI input signal. Options are either Deep Color present (LED ON) or Deep Color not present (LED OFF).

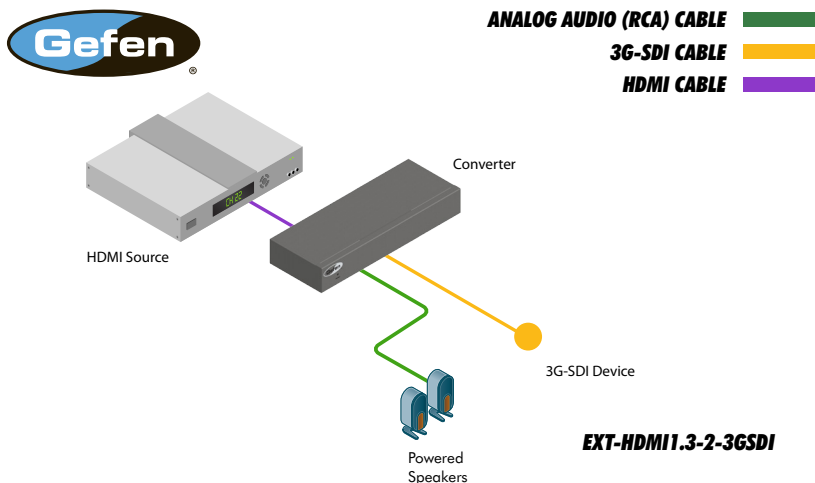**How to Connect the HDMI 1.3 to 3GSDI Converter**

1. Connect the HDMI 1.3 source to the HDMI input of the HDMI 1.3 to 3GSDI Converter using the supplied HDMI cable.

2. Optionally connect a two channel analog audio device to the RCA style L+R analog audio connectors for monitoring of the audio from the HDMI input.

3. Connect an SDI (SD/HD/3G) capable output device to the HDMI output port(s) on the HDMI 1.3 to 3GSDI Converter using a user supplied SDI cable.

> **ⓘ** **NOTE:** This device is capable of outputting a mirrored output through the B output port when the output devices are SDI or HD-SDI. When the output device is 3G-SDI, the device can be configured to run in Level A or B mode. Please see page 9 for configuration options.

4. Connect included 5V DC power supply to the locking power receptacle of the HDMI 1.3 to 3GSDI Converter and an open wall power socket.

Wiring Diagram for the HDMI 1.3 to 3GSDI Converter

DIP Switches

The HDMI 1.3 to 3GSDI Converter has a series of DIP switches on the bottom of the unit (page 6) that will allow manual configuration of features. Please use the diagram and chart below to configure the DIP switch settings. Adjustments should be made with a small pointed object such as a toothpick, a mechanical pencil with the lead retracted or a mini screwdriver.

Switch	Description	OFF (Factory Default)	On
1	Test pattern	Off	On
2	N/A	N/A	N/A
3	RGB Input Range	16-235(limited)	0-255 (full)
4	N/A	N/A	N/A
5	3G Mapping (425M Level)	Direct (A)	Dual Link (B)
6	DDC	Disable	Enable
7	N/A	N/A	N/A
8	N/A	N/A	N/A

1   The color bar test pattern is in 720p (60Hz) format. No input signal is necessary on the HDMI connector to use the test pattern.

3   The "RGB input range" switch is used to force the compression of the video from 0-255 to 16-235 values (from full range to limited). It is useful when the HDMI source connected to the HDMI 1.3 to 3GSDI Converter sends full range video (0-255) even if the EDID on the HDMI 1.3 to 3GSDI Converter is asking for limited range. When set to ON (FULL), the unit will compress the video range to limited.

5   Please note that some 3G-SDI equipment does not support both level A and level B. Set this switch according to the supported 3G level of your SDI equipment connected to the HDMI 1.3 to 3GSDI Converter.

6   When DIP switch 6 is set to ON (up position), the LED indicator light turns on when an HDCP signal is present. This feature does not support a Mac with HDCP. When DIP switch 6 is set to OFF (down position), it supports a Mac with HDCP and disables the LED indicator feature. Use this option when using a Mac® computer as a source.

Things you'll need:

* Computer running Windows XP or Vista
* 3GSDI Converter Firmware Loader 1.0.18 software
* USB cable (to-male)
* Firmware files contained in HDMI To Converter Firmware 1.1.4

1. Download 3GSDI Converter Firmware Loader 1.0.18 from
   http://www.gefen.com/kvm/support/download.jsp

   a. Create a new folder and decompress the downloaded file
      Mini_Updater_Release_1_0_18.zip into the newly created folder.

   b. Read and follow instructions on the Installation Guide.txt for installing
      the firware loader software.

2. Connect the USB cable between your PC and the EXT-HDMI1.3-2-3GSDI

   a. Check Device Manager on Windows to find the correct COM port
      number for the USB connection. Remember this COM port number
   for use in step 4.
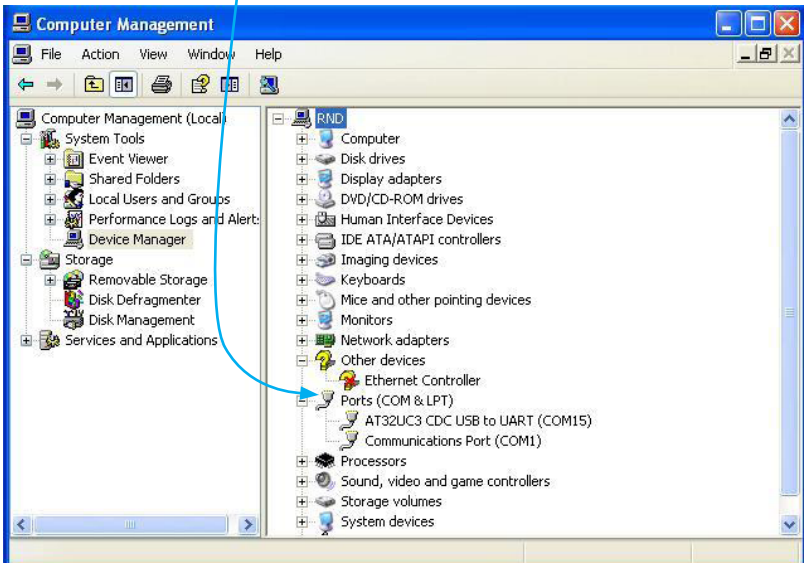
3. Download and decompress HDMI to 3GSDI Converter Firmware 1.1.4 from http://www.gefen.com/kvm/support/download.jsp to the new folder created in Step #1.

4. After installing the Firmware Loader described in Step #2, run the program via the Windows Start Menu….Start/Programs/Gefen/Mini Updater/ Mini Updater.

   a. Use the drop-down arrow to choose the COM port shown in Step #2.

5. Browse for the file MiniHDMI_TO_3GSDI_1_1_4.ini in the new folder created in Step 1.
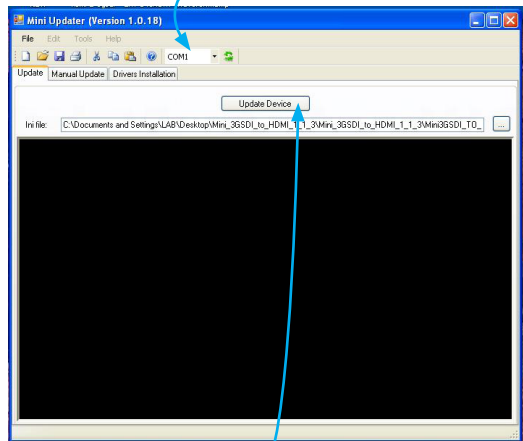
6. Once the file is found, click Update Device.

7. After pressing Update Device, you should see this window confirming the correct COM port, the detected device, and the firmware binary file.
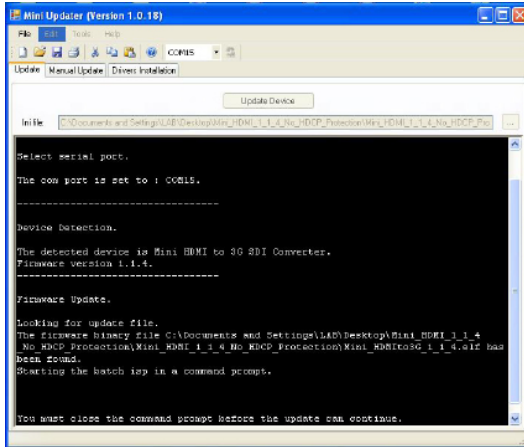
8. Another window will pop-up showing the firmware loader program doing a communication check
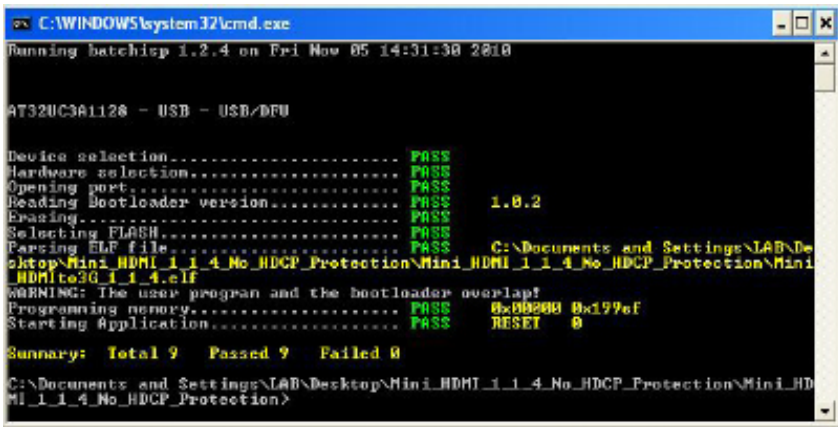
9. If all steps are PASS, the firmware upload process can continue. Click YES to continue the update. If there is a FAIL, repeat steps #2-7.
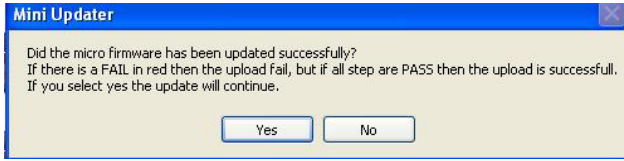
10. After clicking YES, this window will appear twice showing th upload progress.

11. Once the upload process is complete, another window will pop up showing the message "Update finished".".

SPECIFICATIONS
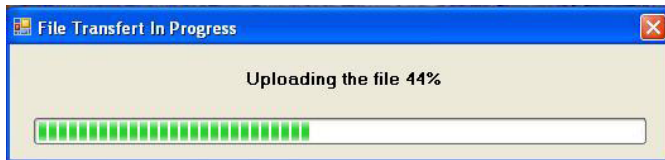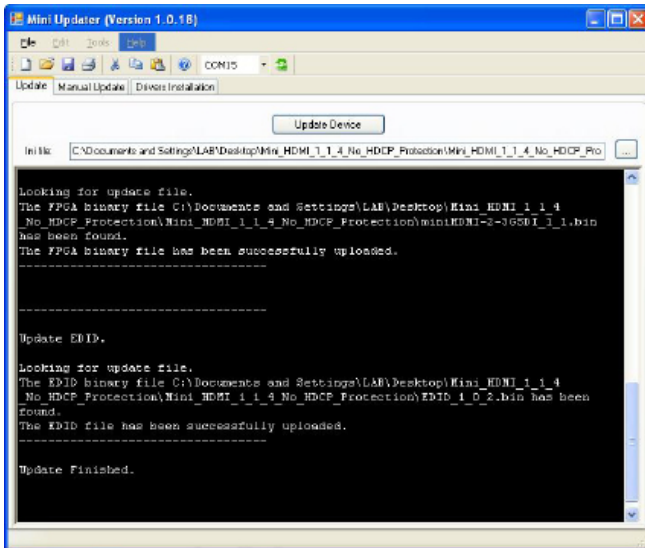
Maximum input resolution (HDMI)... 2K (2048x1080p)

Maximum output resolution (SDI)...1080p @ 60 Hz

Maximum audio channels output (SDI)................................ 8 channels @ 48 KHz

Analog Audio output / monitoring channels (from HDMI source) 2

Input Connector...(1) HDMI Type A 19-pin Female

Input Connector.................(1) Power connector, female right-angle locking 5V DC

USB Input Connector..................... (1) USB female, type B (for firmware updates)

Audio Output Connector.............................. (2) RCA-type L+R analog audio jacks

Video Output Connector....................................(2) SDI/HD-SDI/3G-SDI male BNC

LED Front... (1) 3G data rate detect

LED Front.. (1) HDMI 1080p video lock

LED Front.. (1) 5V power detect

LED Rear... (1) HDCP detect

LED Rear.. (1) YCbCr / RGB color space indicator

LED Rear..(1) 4:4:4 / 4:2:2 color subsampling indicator

LED Rear... (1) Deep Color LED

SDI Compliant...(SMPTE 259M, up to 360 Mb/s)

HD-SDI Compliant..(SMPTE 292M, up to 1.485 Gbps)

3G-SDI Compliant.......................................(SMPTE 424M/425M, up to 3.0 Gbps)

3G-SDI Levels A and B...................................Compliant for 1080P resolution only

Power Supply...5V DC

Power Consumption..2.5 Watts (max.)

Dimensions...7.5"D x 8.2" W x 1.7"H

Rack Size...1U (half-width)

Shipping Weight...4 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

MA-HDMI1.3-2-3GSDI

This product uses UL listed power supplies.